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THE IRON AGE

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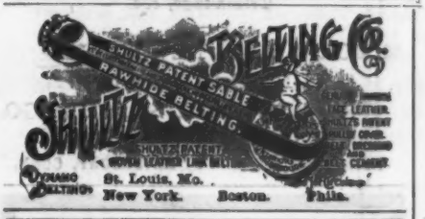

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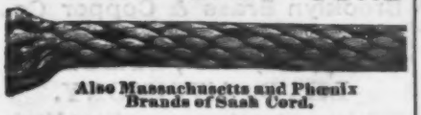

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CAHALL BOILERS See Page 128.

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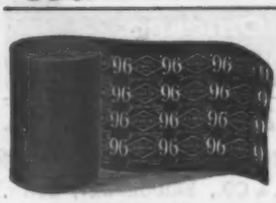

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SEE PAGE 23.

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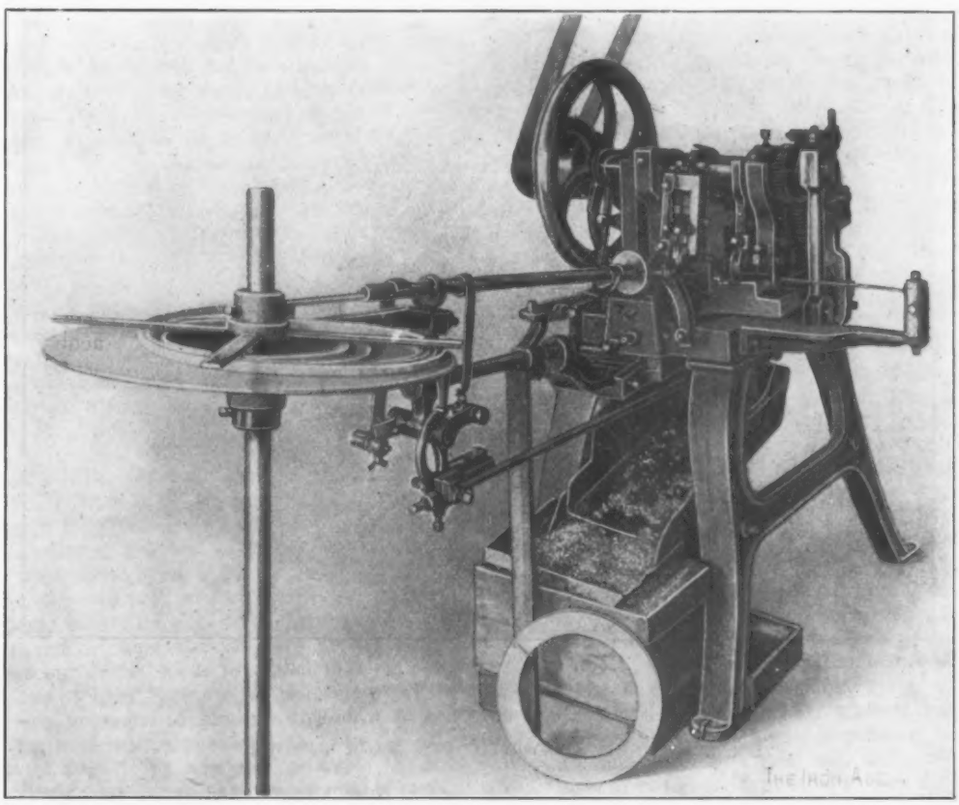
THE IRON AGE

THURSDAY, APRIL 16, 1903.

The Titchener Automatic Cut Tack Feeder.

In the automatic cut tack feeder, here illustrated, a sleeve or outer barrel is mounted upon the forward end of the tack feeding barrel or spindle, and is adapted to have a limited reciprocating movement imparted to it to correspond with the required portion of the strip or blank to form the article. An outer flange or collar is provided at the rear end and fastened securely to the reciprocating sleeve. This flange has a cam which slopes in opposite directions, and which is adapted to co-operate with a suitably disposed part so as to impart a reciprocating movement to the sleeve as the spindle turns upon its axis. A roller, attached by an arm to the front frame of the tack machine, is disposed in the path of the cam and the latter rides thereon and causes a relative rearward movement of the sleeve against the tension of a coil spring mounted upon the spindle and confined between the sleeve and a collar in the rear of the sleeve adjustably connected with the spindle so as to vary the tension of the spring. When the cam engages with the roller stop, the sleeve is moved rearwardly and compresses the spring, but as soon as the cam clears the stop the spring is released, moves forward the sleeve and advances the strip toward the knives a distance corresponding to the amount of movement of the sleeve. Projecting toward the tack machine and fastened to the reciprocating sleeve are two arms, one with gripping mechanism or dogs and the other to guide the strip forward. The dogs on the shorter arm are arranged to engage with the strip and advance it during the forward movement of the sleeve, the gripping mechanism releasing its hold upon the strip when the sleeve moves to the rear. Independent rotation of the sleeve upon the barrel is prevented by lugs co-operating in longitudinal slots cut in opposite sides of the sleeve, these lugs constituting stops projecting from the spindle and having their outer ends in slots of the sleeve. A head is fastened inside the barrel, and extending through it is a longitudinal passage large enough to admit the strip without binding. The inner end of the head is split and spring plates project from it upon divergent lines and form close joint with the opposite inner walls of the barrel. The rear edges of the plates are made rounding and sharpened so as to lie close against the inner walls of the barrel and prevent the formation of any projecting shoulder which would be liable to obstruct the entrance of the strip.



Feeder Attached to a Kimball Tack Machine.

THE TITCHENER AUTOMATIC CUT TACK FEEDER.

These spring plates act in the capacity of guides, to give proper direction to the strip when placing it in position. By having the spring plates of spring metal they will at all times bear against the opposite sides of the spindle and preclude the formation of any projecting parts.

When the sleeve is moving rearwardly upon the spindle the gripping dogs which move the strip forward are released, and to prevent the strip from moving backward with the gripping mechanism a detent device is provided, which projects from the head toward the cutting knives. As the barrel turns upon its axis the cam of the reciprocating sleeve will be alternately brought into contact with the roller stop and the sleeve with its attendant parts will be moved rearwardly against the tension of the spring. As soon as the cam clears the stop the sleeve under the influence of the spring will move forward and advance the strip to the cutting knives, as

is readily understood. In the rearward movement of the sleeve the gripping dogs will release their hold upon the strip and the detent will engage therewith, and upon the forward movement of the sleeve the dogs will grip the strip and carry it past the detent. By adjusting the cam and stop roller the movement of the sleeve can be varied as desired, hence the tacks may be cut of different sizes. The feeder is made by E. H. Titchener & Co. of Binghamton, N. Y.

Should Analysis Be Included in Steel Specifications?

The article on the above subject in a German magazine, which was summarized in *The Iron Age* of January 8, together with some comments thereon by Professor Martens, has stirred up quite a little controversy on the other side of the Atlantic: In the last number to hand of *Stahl und Eisen*, Herr Stoeckmann, a chemist, makes a bitter attack on Herr Knaudt and his conclusions. He maintains that Knaudt does not know how to interpret his analyses, and that the plate from which the test was taken was not homogeneous, but, in fact, higher in carbon at the front than at the rear, and the same was true of the silicon and phosphorus. The average difference in carbon between the two ends of the plates was 0.04 per cent., and the tensile tests corroborate this. The differences between the various analyses look larger than they really are, owing to the fact that in the diagram published each 0.01 per cent. of carbon is represented by 3 mm., and also because some of the results are given in three decimal places and others in two only. Expressing all of them in two decimal places, the results are as follows:

	Per cent. carbon.
Dr. Hausdorff	0.12
Zurich	0.11
Berlin	0.13
Munich	0.11
Steel works A	0.14
Steel works B	0.14
Steel works C	0.14

It will be seen that the greatest difference between the various chemists is 0.03 per cent., while the difference between the two ends of the plate is 0.04 per cent. There is not much doubt that an equal variation exists between the center and the sides, and if this is the case the method of taking the test material was unreliable. The difference in the analyses is therefore very small, and at least a part of this difference is caused by the lack of homogeneity of the plate, so that the real errors of analysis practically amount to nothing. It should also be noted that these analyses were made in the ordinary course of work, and the results were not checked as would certainly be done if much were at stake. Herr Stoeckmann finally insists that if analyses are barred from steel specifications, it must be because of the lack of homogeneity in the material and not because chemists are unreliable.

To these strictures Herr Knaudt replies that the fact of his having taken tests from both ends of the plate and found them to vary in analysis does not affect his conclusions any more than if he had taken two separate plates, as everybody knows that material rolled from top and bottom of the same ingot will give different results. Regarding the distorted impression alleged to be given by his diagram, he says that it is immaterial what measurements are taken to represent each unit if the zero line is shown. The absolute differences should not be considered, but the percentage; thus in test K the lowest percentage of sulphur is 0.35, or 0.31 smaller than the highest, which was 0.66, the difference therefore being 0.31: 0.35 or 90 per cent. A similar reasoning for the phosphorus in the same sample gives a difference of 0.35 per cent. He disputes the assertion that sufficient care was not taken in getting the test material.

In a further letter Herr Stoeckmann insists that the absolute and not the percentual difference should determine the degree of accuracy, and, regarding the comparison of the sulphur results obtained in test K, he asks why Herr Knaudt takes 0.35 as the divisor and not 0.66, which would be just as reasonable and would reduce the difference between the highest and the lowest amounts of sulphur to 47 instead of 90 per cent.

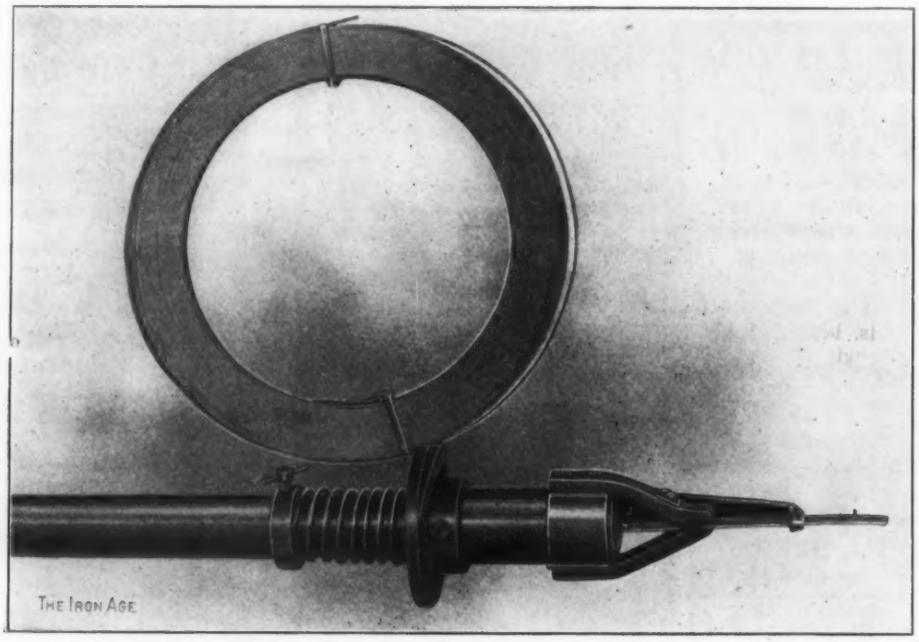


Fig. 2.—View of Feeder.

THE TITCHENER AUTOMATIC CUT TACK FEEDER.

Allegations have been made from time to time as to vibrations and swaying in high winds of the tall buildings in this city. One of these was recently tested on the twenty-first floor during a gale, which blew at the rate of 82 miles an hour. The experiment was made with a transit and a spirit level, but not even a tremor was found, and at times several violent blasts struck the structure. Tenants of the premises said that they never had noticed the slightest vibration.

Abnormal Types of Steam Engines.

EGBERT P. WATSON.

Many years ago, more than I care to recall, I was setting the huge slide valves of a marine engine. The man in charge of the job was looking on apathetically, because he didn't know how to do it himself and didn't want to, but observing the proprietors of the shop coming down the dock he deemed it necessary to show some interest in the work, so he called out when they got within earshot: "How much lead have you got now, sir?" "Quarter and a sixteenth," I replied, sententiously. "Quarter and a sixteenth," he said, "I fear you have made a false mistake." This caused one of the proprietors to guffaw loudly, and me to gaze fixedly into the gaping port lest I should follow suit.

I have related this incident for the reason that it seems apposite to the labors of some who are puzzling their brains to get up an abnormal type of steam engine which has nothing to recommend it except its exhibition of a lack of engineering ability, and in most cases a total ignorance of its first principles, or, if the one includes the other, I will say that there is a conspicuous want of knowledge of mechanical movements and their values as applied to steam engines. Applying the remark of my old-time friend I fear they are making "a false mistake," for, although I have seen many ambitious attempts to wipe the standard reciprocating engine from the map of mechanical engineering, I have never known one of these hermaphrodite engines to come into general use. After all the failures of their predecessors in the same line it might naturally be supposed that the projectors of such schemes would be doubtful, to say the least, of the practicability of them, but the last thing that enters their heads is the possibility of failure to land anywhere. The other fellow's engine was certainly impossible, but their own never is, because the latest excursionist into this impassable engineering morass has a mechanical motion which is going to set up an economy hitherto unheard of. This is just where devisers fail, for mechanical movements of whatever nature have nothing to do with economy, but are simply means to an end, and sometimes serious obstacles to success.

The first thing to consider in proposing to introduce a new steam engine is whether it will take less fuel to run it than existing engines, and why, how it is possible. A man who wishes to save time and his own or other people's money will institute a careful search and consult with persons of long experience before embarking upon such an undertaking, for the very good reason that in 99 cases out of 100 he is mistaken in all his surmises, every one of them, because he is assuming that things which are unknown to him are unknown to every one else. He does not comprehend the very great improbability of discovering any new principle in the use of the working fluid which has not been experimented with and found impracticable long before he was born. Consulting with others, however, is a very risky proceeding, it is thought, for it is possible, even probable, that the person consulted with will fly headlong to a patent lawyer and secure the prize for himself.

I have seen so many instances of the kind alluded to that I can predict the finish of all such schemes with certainty so far as investments are concerned, but many who have approached me upon such topics have only been dissuaded with much difficulty from pouring their money into mechanical rat holes, fearing that they were losing the chance of making vast sums in a very short time. It is surprising indeed how credulous people are in this direction; they are as sheep before the shearer, and no assertion is too gross for them to absorb; a plausible promoter with his impossible statements boldly uttered can get more money in a short time for a machine to extract sunbeams from cucumbers than a legitimate proposition can obtain in a long time, and the most fascinating subject in this line is a new steam engine. The smaller and crookeder it is, and the more "ingenious" motions the details have the better. Another curious feature of these "new" steam engines is that in a majority of cases they are mere repetitions of previous devices whose claims to novelty are based upon very slender supports. Patents are so easily obtained nowadays that a clever attorney can cover an invention by slight changes in the mechanism which are of no particular value practically, such as a different way of packing a joint, or omitting a joint wholly. If it were proper to do so I could name certain steam engines which are so nearly fac similes of each other that it is hard for an expert to tell the difference between them. Just why any one should devise a steam engine to induce what he supposes is a new mechanical motion is difficult to discover, unless it is the fascination which certain combinations of cams, eccentrics, levers and gears exercise upon some minds. They slip, slide, wabble, dodge around each with rhythmical sequences, and the discoverer of them fancies that they would cut a fine figure as a valve gear, about the last place for venture of the sort. Combined with cylinders and connecting rods of a standard type they are supposed to comprise a new steam engine, and "syndicates" are formed to exploit them. The capitalization is always for millions, lesser sums being supposed to decrease the dignity of the undertaking and afford a greater probability of dividends, upon the principle, perhaps, that the more stockholders there are the larger the sales will be. It is not difficult to foresee the end of all such ventures; there is but one, and that is failure sure and certain, there being no basis for any other result. If these disasters were borne only by those directly responsible for them it would be bad enough, but in a majority of cases they are saddled upon persons who have been deluded into parting with their small savings or incomes in the hope of doubling them in a few weeks or months, the vendors of the shares getting out from under those they have subscribed for first, in many cases without having paid a penny for them. They have carefully avoided legal responsibility by so wording their statements as to future business that they cannot be held and the unfortunate investor has no recourse whatever.

There is still another formidable obstacle in the way of realizing returns from schemes like those commented upon, in any reasonable period. This is the time it will take to establish a demand for the engine, or whatever it may be, and build up a trade that will be profitable. Persons of long experience in such matters understand this aspect of the subject thoroughly, but the average man or woman investor has an idea that it is only necessary to advertise the thing for a few weeks in order to put it on a commercial footing, and if a dividend is not declared in the first year (six months is about the average time they wait) they make trouble. Even if the invention or device, of whatever nature it may be, has decided value it will have to go through the same routine before it can be established in public favor. The steam turbine has now been in use for many years, and its practicability and economy is no longer a question, but it was so great an innovation that it is only quite recently that it can be said to have a future, and there are plenty of persons still who have no faith in it.

Many will dissent from the views expressed in the foregoing lines, asserting that if every invention is to be turned down because it is untried there will be an end to all progress, and they will cite cases without number where failure was predicted for machines which afterward proved of great benefit to mankind. This is true and a point in favor of trying everything and anything that is brought forward if the experimenters have faith and money enough to exploit it, but it does not follow that previous experience in the same field of investigation should be thrown away as of no value. "Experience teaches," and if the type is at fault or has a hereditary taint of impracticability attached to it, ordinary prudence suggests that it be left severely alone. The world is wiser than it was a half century ago, when prejudice or vested interests combined to keep valuable machines out of use. In these days everything is measured by the dollar rule. Those who have the dollars know pretty well whether the schemes offered to them have any market value.

The New England section of the National Metal Trades Association have organized with the selection of the following district committee: Chairman, Charles E.

Hildreth of P. Blaisdell & Co., Worcester, Mass.; vice-chairman, F. D. Wanning of the Birmingham Iron Foundry, Derby, Conn.; E. P. Robinson of the Atlantic Iron Company, Boston; Alonzo W. Whitcomb of the Whitcomb Mfg. Company, Worcester, and D. D. Russell of the James Russell Boiler Works, Boston. The committee is at work on plans following out various actions taken by the National Association at the annual meeting at Buffalo.

Activity in Soft Coal Mining.

BY F. E. SAWARD, NEW YORK.

There seems to be no cessation to the development of the mineral resources of this country, and almost every day in the week one may hear of transactions involving a considerable amount of money, such as that of a few days ago, when 150,000 acres of coal and timber land in Greenbrier and Pocahontas counties, W. Va., were disposed of. Then there is the suggestion of the purchase of a 40,000-acre tract by the State of Tennessee, for its system of using the convicts in coal mines owned by the State. Land of this character lying either in the vicinity of the present State coal fields, or on the Baxter road, or, probably, best of all, lying near the Chattanooga road, can be bought for from $5 to $9 per acre. Getting back to older coal mining districts, like those in Ohio, one finds that there are still untouched areas to be developed, for a Pittsburgh concern have just closed negotiations for the purchase of 4000 acres of the Pittsburgh seam of coal in Belmont County, Ohio. The coal lies along the main line of the Baltimore & Ohio Railroad, and extends back to Captina Creek, where it is reported another railroad line is to be built. The activity of Belmont County coal lands has been notable for the past two years. Vast tracts of excellent coal have been allowed to remain undeveloped there, but the present activity in purchase indicates extensive development in the near future.

An enterprise which has attracted only little attention up to the present, but which may be significant because of the people interested therein, is the recently incorporated Empire Coke Company, which will have their headquarters at Geneva, N. Y. The Board of Directors is an imposing one, as these names show: C. J. Langdon, Elmira; Austin Lathrop, Corning; William D. Kelly, president of the Clearfield Coal Company; Theodore Voorhees, vice-president and general manager of the Philadelphia & Reading Railway; Irving Rouse of Rochester; Frank Taylor, president of the Union Trust Company, Rochester; S. S. Gould, president of the Gould Mfg. Company, Seneca Falls; Charles I. Avery of Auburn; Walter A. Clark, president of the Phillips & Clark Stove Company; William L. Herenden, president of the Herenden Mfg. Company, and Edward H. Palmer. The plant will be in operation by December 1. It will manufacture 150 tons of coke per day and 250,000,000 cubic feet of gas per year, besides coal tar and ammonia, and supply it to Geneva, Waterloo, Seneca Falls and Aurora, N. Y.

The Louisville & Nashville is building two extensions into the coal and iron region of northern Alabama, the Brunswick & Birmingham Railroad is pushing westward through Georgia, and the Atlantic & Birmingham is constructing a new line for the purpose of improving its facilities in the Birmingham region. One of the most important extensions into the Birmingham district is that of the Union Springs & Northern Railroad, which is to build from Fort Davis, on the Seaboard Air Line's Montgomery division, northwest 60 miles to Rockford, in the direction of Birmingham. In this connection it is reported that after the Seaboard establishes its terminals in Birmingham it will build further extensions in the direction of New Orleans.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Company, has been elected to a similar position in the Davis Creek Coal & Coke Company to succeed W. E. Leake. The election took place at a meeting of the Board of Directors, held in New York. The former president, Mr. Leake, remains as a prominent member of the Board of Directors, the *personnel* of which is as follows: J. C. Maben, W. E. Leake, A. H. Larkin, H. O. Seixas, C. A. Lowe, George Parsons and Henry Parsons. The property of the company will be greatly developed in the near future, it having a capacity of 1000 tons per day, although at present the output is half that amount. In addition to the increased output batteries of coke ovens will be built on the property and the manufacture of coke begun.

J. F. Anderson, a prominent mine operator of Butler, Pa., has been in Tennessee for the purpose of investigating the coal mining situation in the Chattanooga district, and expressed himself pleased as well as surprised at the mineral resources of East Tennessee. He says that Northern and Eastern capital is hunting for investment, and the fame of the undeveloped riches in the South has reached that country and is turning the stream of capital from the West to the South. He bought several hundred acres of coal land on Walden's Ridge, adjoining the property of the Rock Creek Lumber & Mining Company. Mr. Anderson also investigated the field with reference to other forms of industry, including some silica sand land.

Gen. J. T. Wilder says that the coal fields of the Cumberland Mountain section, along the line of Tennessee and Kentucky, are the finest in the world, and are just being opened. A big company, headed by Governor Stearns of Michigan, are beginning work on one of the largest plants in the country. This company have 65,000 acres of land, mostly in Fentress County, Tenn., which contains some of the best coal in the world. The company are now building a branch road from the Q. & C., near Pine Knot, Ky., to their land, and will in a short while be mining coal.

The Tennessee Coal & Lumber Corporation, incorporated under the laws of South Dakota, have as incorporators: Charles Bary, Edmund P. Schmidt and Ivan W. Goodner. The directors are: Peter J. Somers, New York; Charles Bary, New York; William H. Dyrenforth, Chicago; R. P. Porter, New York; Ivan W. Goodner; M. A. Goodner, and G. W. Sanders, Pierre, S. D. The Tennessee Coal & Lumber Corporation will operate in Cumberland County, where they own large tracts of land.

A short line that will do much good in relieving freight congestion in coal and coke in Illinois is the Coal Belt Railway. The proposed road is a steam railway connecting with the Coal Belt Electric Railway, which starts at Marion and traverses 30 miles of the most valuable and productive coal fields of Illinois—those of Williamson County. The line will connect with the Chicago & Eastern Illinois Railroad somewhere on the main line in Williamson County, and has for its principal object the carrying of coal to the Chicago market. Francis S. Peabody, president of the Peabody Coal Company, who is at the head of this enterprise, recently said: "This new road, the details of which I am not prepared to divulge, will have a great effect on the solving of the coal question in Chicago. We have already a good carrying capacity, and with a direct connection between the coal fields and the roads leading to Chicago direct, we feel that the situation which has so frequently confronted us will be overcome."

An enterprise which is of considerable value to the smelters of the far north is the deal in coal lands made by L. Ernst, president of the Northwest Coal & Coke Company, owning 34,000 acres of coal land near the Crow's Nest Pass, British Columbia. It is announced that the treasury stock of the company, consisting of 10,000 shares, has been sold in London, England, for $1,000,000. The Northwest Coal & Coke Company own 34,000 acres of coal land 16 miles from the Crow's Nest Railroad, and located on the north fork of Old Man's Creek. The company will put in a road 16 miles long, running from the Crow's Nest Pass road, where the middle fork of Old Man's Creek empties into the north fork, a distance of 16 miles to the coal lands, giving an outlet for all coal to be mined by the company. The grade will be an easy one, and all the money needed for the road and for the future development of the coal mines is now on hand. The company, it is stated, have a splendid property, with some of the widest coal seams known on any part of this continent; they are sufficient to show 64 feet of workable coal.

There is quite a tinge of romance connected with land

at times; the moonshiners of West Virginia and Kentucky have been driven off land that is now being worked for coal mining and coke making; a recent instance where 45 squatters' rights are being fought by one B. F. Butler is in Buchanan County, Va., on the headwaters of the Sandy River. The land in controversy was originally patented by Smith & Banks, and was sold to help pay the expenses of the war of 1812 and 1814; the land was purchased by William Lamb of Richmond. Lamb's executor sold it to Joseph Hagan and Sarah Parcell. Sarah Parcell sold to Joseph Culbertson, who sold the same to Joseph Hagan. Then Joseph Hagan conveyed the right to Patrick Hagan, now living in Scott County, Va. In May, 1874, Patrick Hagan deeded this land, the entire Smith and Banks patent being over 200,000 acres. The deed never went to record, the purchaser preferring one of different character, and about 1883 Hagan made a new and more satisfactory one, with special warrant to all his right, title and interest in the Smith and Banks patent. It was at this time that B. F. Butler had an interest in the land so purchased, who, on March 20, 1878, filed in the United States Circuit Court at Abingdon, Va., declarations in ejectment against 47 of the adverse occupants of the land. Forty-five of these actions are still pending. These are the lands that are alleged to have inspired the bill to have all suits under the "land grabbers'" acts, to more than 50,000 acres, tried in the Circuit Court at Richmond, and nowhere else. Land at one time not worth 10 cents an acre in that part of the country is now worth up to $30 an acre.

The Production of a Black Color on Brass.*

BY ERWIN S. SPERRY.

Much difficulty is often experienced by platers and other brass workers in the production of a satisfactory black color on brass. This would, perhaps, appear somewhat ridiculous inasmuch as brass will of its own accord oxidize to a black color if left for any length of time. Oxidized silver, which was much in vogue at one time, greatly stimulated the production of a similar finish on brass, and the same method was employed, but usually with unsatisfactory results. In the oxidation of silver the property of tarnishing by sulphur compounds is made use of, as the ready susceptibility of this metal to such influences is sufficient to render the process quite satisfactory. Silver is very easily blackened by sulphnr and its compounds, and all that is necessary to do is to bring it in contract with a solution of potassium or sodium sulphide (liver of sulphur), when an immediate blackening takes place. The same method used on brass produces a black color, but not entirely satisfactory, as it is wanting both in color and in depth. If allowed to remain for a long time, in order to obtain a deep black, the coating does not appear to adhere, but scales off. These difficulties render the employment of sulphur compounds in blackening brass more or less unsatisfactory, and much trouble is found in their use. Those who have attempted their use have usually abandoned the method in favor of others.

The solution now generally employed for the production of a black or oxidized surface on brass is a solution of carbonate of copper in ammonia. The work is immersed in it and allowed to remain until the required tint is produced. The carbonate of copper is best used in the so-called plastic condition, as it is then much more easily dissolved. Plastic carbonate of copper may be purchased, but if one wishes to make it the following method answers well: Make a solution of blue vitriol (sulphate of copper) in hot water, and add a strong solution of common washing soda to it as long as any precipitate forms. The precipitate is allowed to settle and the clear liquid poured off. Hot water is now added, and the mass stirred and again allowed to settle. Again the clear liquid is poured off, and the operation of adding water, settling and pouring off repeated. This is continued until everything has been washed out of the green carbonate of copper, which remains in the bottom of the vessel. Six or eight times is usually sufficient to remove the impurities. After the water has been removed during the last pouring and nothing is left but an emulsion of the thick plastic carbonate in a small quantity of water, liquid ammonia is added until everything is dissolved and a clear, deep blue liquid is produced. If too strong, water may be added, but I have found that a strong solution works better than a weak one. If it is desired to make the solution from commercial plastic carbonate of copper, the following directions may be followed: Dissolve one pound of the plastic carbonate of copper in two gallons of strong ammonia. This gives the required strength of solution.

The brass which it is desired to blacken is first boiled in a strong potash solution to remove grease and oil, then well rinsed and dipped in the copper solution, which has previously been heated to from 150 to 175 degrees F. This solution does not work well cold, and if heated too hot gives off all the ammonia. The brass is left in the solution until the required tint is produced. The color produced is very uniform and black. It also holds tenaciously and does not readily peel off. After the desired color is produced the brass is rinsed and dried in sawdust. A great variety of effects may be produced by first finishing the brass before blackening, as the oxidizing process does not injure the texture of the metal at all. A very satisfactory finish is produced by first rendering the surface of the brass matt, either by scratch brush or similar methods, as the black finish thus produced by the copper solution is then dead—one of the most pleasing effects of an oxidized surface. Various effects may also be produced by coloring the entire article and then buffing off the exposed portions.

The best results in the use of this solution are obtained by the use of the so-called red metals—*i. e.*, those in which the copper predominates. The reason for this is quite obvious. Ordinary sheet brass consists of about two parts of copper and one part of zinc, so that the large quantity of the latter somewhat hinders the production of a deep black surface. Yellow brass is colored black by means of the solution, but if the very best results are desired it is well to use some metal having a reddish tint, indicating the presence of a large amount of copper. The varieties of sheet brass known as gilding or bronze work well. Copper also gives excellent results. Where the best results are desired on yellow brass a very light electro-plate of copper before the oxidizing works well and gives an excellent black. With the usual articles made of yellow brass, however, this is rarely done, but the oxidization carried out directly.

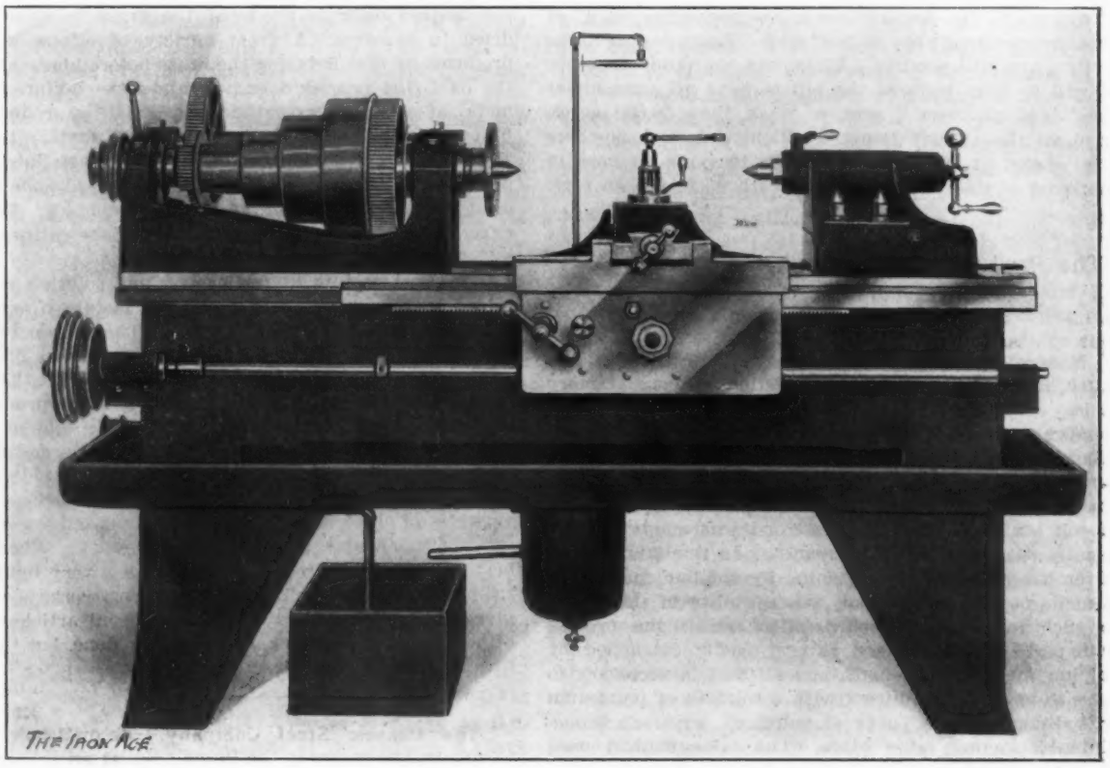
* From the *Metal Industry*.

The Passaic Steel Company.—The Passaic Steel Company, successors to the Passaic Rolling Mill Company, and who acquired the plant of the latter company at Paterson, N. J., in February of this year, have had plans prepared for a new steel plant at that place in connection with the existing plant. The plans call for 12 50-ton open hearth furnaces, a blooming mill, a finishing structural mill with the necessary gas producers, coal storage plant, boiler house and power plant, with a total capacity of 300,000 tons per annum of finished structural steel shapes. At present the company are building two of these furnaces to be ready for operation July 1 of this year, with such plant in connection therewith as is necessary, for all of which the contracts have been let and the work is now under way. The contract for the excavation, clearing of land, removing old buildings and putting in foundations has been placed with J. W. Ferguson of Paterson, N. J. The contract for the brick work on the furnaces has been given to the Forter-Miller Engineering Company of Pittsburgh, Pa., that for the electrical cranes, &c., to the Morgan Engineering Company of Alliance, Ohio, while the steel work for the buildings will be made in the company's own shops at Paterson. The contract for the electrical work has been placed with the Westinghouse Company of Pittsburgh, while the engines will be built by the Buckeye Engine Company of Salem, Ohio. The company have in contemplation the removal of their present bridge shops to a new location and the construction of a modern bridge shop plant with a capacity of 3000 to 4000 tons per month.

The New Draper Taper Turning Lathe.

The Draper Machine Tool Company of Worcester, Mass., recently designed and are now building a 16-inch special taper turning lathe for such work as turning twist drills, studs, &c., in which a perfect taper is required. As will be seen from the engraving, the tool is especially strong and heavy, being intended to withstand the strains due to the use of the new tool steels. The head and tail stock are fitted to a swivel plate, which permits of turning tapers 1⅝ inches to the foot, the head and tail stock centers always remaining in line. There is no wear or back lash, as the swivel plate is pivoted at the center of the bed and is securely fastened at both ends after the lathe has been set for either straight or taper work. The back end of the plate is flush with the end of the bed and both plate and bed are milled on the same circle. By this means the plate can be easily set for either straight or taper work.

The lathe swings 16 inches over the bed, 8½ inches over the carriage, and is 2 feet 1 inch between centers. The spindle is of hammered crucible steel, running in bronze bearings, and is formed with a 1¼-inch hole. The front bearing is 2¾ inches in diameter and 5 inches long. The largest step of the cone is 11½ inches in diameter with 3⅜-inch face. The ratio of back gearing is 11.23 to 1, and the feeds are 78, 49 and 34 to the inch.



THE NEW DRAPER TAPER TURNING LATHE.

The Bessemer & Lake Erie Railrod report (for 1902) again shows the extraordinary capacity of a railroad whose traffic is nearly all of a simple nature and chiefly through coal and coke in one direction and ore in the other. The company have 203 miles of railroad and the average freight haul last year was 127 miles ; and for every passenger mile there were 70 ton miles. The heavy freight traffic of the road, equivalent to 5,754 tons each way daily over the whole mileage, was carried by an average of only 6.3 freight trains each way daily, so that we may assume the road to be capable of carrying very much more traffic if it can be handled at the termini. The average trainload of 913 tons is not equaled or approached on any other railroad, so far as reports show; but doubtless sections of great systems which report only the averages of the entire system have actually immensely greater trainloads than such average. Yet the Bessemer & Lake Erie trainload was larger in 1901 than last year owing to the fact that coal shipments to Lake Erie did not keep pace with ore shipments from the lake. With an average rate of 0.419 cent per ton per mile, the gross earnings per freight train mile were no less than $3.82, at a cost of $2.03 which may be contrasted with the 66.6 cents gross earned per passenger train mile.

An Unprecedented Wheat Yield Indicated.

It seems probable that the greatest winter wheat crop ever raised in the United States will be harvested next summer. The condition of winter wheat on April 1, according to the Government report issued last Saturday, fully verifies commercial estimates. In fact, it indicates even a greater yield than the trade have anticipated, placing the condition of the crop at 97.3. Should this condition be continued until harvest, a yield of 579,000,000 is indicated, based on the area planted last fall of 34,000,000 acres, 17.5 bushels being taken as the average yield on a condition of 100. The 1902 crop yielded 412,000,000 bushels upon an area of 28,581,000 acres. As compared with the returns on December 1 there has been a decline of 2.4 points only, verifying the statement that the plant went through the winter with relatively no injury of importance. The acreage planted is the largest ever recorded, and no reports of abandonment of any part of it have been received. The largest crop of winter wheat ever harvested thus far was in 1901, when the yield was 431,000,000 bushels. The prospect for 1903 at present is for a yield 32 per cent. greater than the heaviest crop. The condition of the most important winter wheat States ranges from 95 to 98; the lowest in Texas, where the condition is 94. On April 1 last year the condition for the entire country was 78.8, at the corresponding date in 1901 91.7, and the average on April 1 for the last 10 years 82.1.

The average condition of winter rye on April 1 was placed at 97.9, against 85.4 in 1902, 93.1 at the corresponding date in 1901 and 87.9 the mean of the April averages for the last 10 years.

Lake Iron Ore Matters.

DULUTH, MINN., April 10, 1903.—The lakes are finally open, after a week's delay from strikes, and the accumulation of ships at either end has been broken, ore is pouring out of docks, and the congestion that was feared has ceased. All ore roads are now moving their tonnage along rapidly, but summer schedules have not been put on. Of the great fleet of United States Steel ships in winter quarters at Duluth only a very few now remain, and these will be out in a day or two. There is no ore rate yet, the Steel Corporation refusing to bid for tonnage. It is understood that outside shippers would be willing to pay 85 cents a ton, but dare not till the big company evinces their intentions. This they may not do for some time. They are evidently to pursue a policy quite different from past years, and are not yet ready to have outside ships handling their ore. If rates were fixed today they would be low, less than last year when the additional cost of operation is concerned. This is an item of from 7 to 8 cents a ton of cargo, making a rate for this year of 82 to 83 cents, not more than equivalent to that of 1902. Grain is being chartered at the equivalent of about 85 cents for ore.

The Snyder Ore Interests.

Ore belonging to W. P. Snyder and associates will not be coming from the Mesaba range in quantity before another year. Their St. Clair mine in 22-58-20 is operating, and will ship 100,000 tons this year. The Minnesota Iron Company are operating this mine under contract. The Shenango will not be shipping until August, and its tonnage for the year cannot be large. This mine has been in progress of development for 18 months, but owing to unforeseen circumstances has been delayed time and again. It is a standing proof that sufficient exploration is as necessary on the Mesaba as anywhere else. Their Webb mine will be opened this year, but can scarcely be a shipper until 1904. The ore body is deep and heavily covered by rock. Nothing has been determined definitely as to their ore bodies on the west end of the range. The Standard Mining Company, a subsidiary concern, have been exploring the old Arcturus property, and it is understood that the lease provided for will be taken and the mine operated. There is already shown up an enormous tonnage of ore that when washed will be a very fine grade. This ore will probably lose about 25 per cent. of its bulk in washing. An experimental plant for its treatment will be constructed this year. The Arcturus has been explored time and again, and has been persistently turned down. Now thorough and well considered experiments in washing, conducted with a view to the disposal of this property, accurate explorations and the change in market conditions will doubtless bring it into the lists as a desirable proposition. Much of the Arcturus ore is excellent physically, and will be when washed a fine grade of Bessemer hematite. W. P. Snyder & Co. have just closed the purchase of a lease on the southwest one-quarter of the northwest one-quarter of section 15-58-19, where nearly 6,000,000 tons of 56 per cent. non-Bessemer ore have been shown at $110,000. This property will not be opened at once. Walter Fitch, formerly manager of the Champion mine, at Beacon, Mich., who is to manage the Snyder mines, has moved to Duluth, and will make his headquarters there.

On the Menominee range the old Hope mine, which has been under exploration by the Oliver Company for some time, is to be abandoned; the machinery is now coming out. Pickands, Hather & Co. have been at work two years in the old Caspian mine, near the Oliver Company's Dober. Now they have struck ore. A shaft was sunk 300 feet, and in a drift 60 feet long ore was found. The property was explored several years ago, and a drill then located the ore body. The mine makes a great deal of water, but a large pumping capacity has been installed recently. It is now in the hands of the Buffalo Steel Company. Shipments from Bristol of Oglebay, Norton & Co. are very brisk, and the mine will make a far bigger record than last year.

Recent Purchases of Ore Lands.

Several sales of Mesaba range ore properties have taken place the past few days. There have been enough of them, and they have been under such varying conditions and to so diverse purchasing interests as to establish a sort of basis for comparison of values of ore in the ground. The facts as to these sales are well worth study on the part of any interested in the business.

A leading ore firm of Cleveland have just bought an 80-acre tract near Hibbing, in which there have been found a trifle less than 2,000,000 tons of ore, averaging under 54 per cent. iron, and non-Bessemer. The tract is a State lease, and as such carries a royalty of 25 cents a ton, but with the very small minimum of 5000 tons annually. The buyers pay a cash bonus of $40,000, and agree to pay an additional royalty of 10 cents a ton above the State's 25 cents, on which addition their annual minimum is 100,000 tons. This is to be paid on all the ore hereafter found by explorations to be continued with reasonable regularity. The buyers considered their deal better than one offered them providing for a cash payment larger by $60,000, but with a less additional royalty by from 3 to 3½ cents a ton.

A mining company representing an Ohio iron works have bought a property explored to show about 2,500,000 tons of 58 per cent. non-Bessemer ore, and are paying therefor $50,000 cash bonus and 35 cents royalty on an annual minimum of 100,000 tons.

A Pittsburgh syndicate already owning large ore deposits have bought a 40-acre tract explored to show nearly 6,000,000 tons of 56 per cent. non-Bessemer ore of good physical structure, for which they pay $110,000 cash bonus, and must give 20 cents a ton for at least 100,000 tons a year. This is a very favorable deal compared to many others. All these properties call for underground mining, and most of them have no exceptional conditions, either as to ore or its handling.

A Pittsburgh syndicate that have been exploring a large tract in the western Mesaba and have found there a very large tonnage of washable 40 to 45 per cent. ore, low in phosphorus, will undoubtedly close their option for lease. The lease calls for a royalty of 15 cents a ton, and an advance payment of $200,000 in royalties.

A leading transportation interest have just closed a deal on a State lease that they have been exploring for some time. It pays $55,000 cash for the 25-cent lease. It is hard to describe the ore found in this property, or to show the conditions that will confront any one entering it for mining operation. There may be 700,000 tons of merchantable ore in the property, possibly more, though the exploratory maps indicate very little as to actual conditions. This ore is scattered at different levels, in thin seams, separated by shelves and horses of rock, sand or lean ore in such a way that a connected system of mining seems almost impossible. Aside from this scattered merchantable ore there are shown by the drill holes several million tons of lean stuff running at an average of perhaps 40 per cent., and non-Bessemer. It would seem that the buyer must figure on getting a return from this lean ore at some future time.

These and other almost similar sales call attention to facts of some importance. The finds of Bessemer ore are few. Finds of large tonnage are infrequent. Ore that five years ago was wasted in dumps or made into road beds and ballast, or that much later was not considered worth paying anything for, is now good enough to bring 35 cents a ton in the ground. Part of these buyers are belated iron makers who must have ore, but who have not read those signs of the times that have been plain as the day for the last four years. And while such sales are being made, the mining companies subsidiary to the United States Steel Corporation are abandoning options on which there is a bonus to be paid at time of taking lease, so secure are they in their position and so vast are their resources in ore reserves. D. E. W.

The Buffalo & Susquehanna Coal & Coke Company, of which Frank H. Goodyear and Charles W. Goodyear of Buffalo are the heads, have under contract an extensive tract of valuable coal lands in Indiana, Jefferson and Armstrong counties, Pennsylvania, and will at once commence mining operations there. The Buffalo & Susquehanna Railroad, which is owned by the same interests, will be extended south from Sinnemahoning to the new mining properties.

Notes from Mexico.

Light Railway Material.

DURANGO, April 7, 1903.—Reference has been made in these notes to a recent order placed in Europe for light, portable track material, which it is the custom to lay down in many of the large haciendas and mines in Mexico for the movement of products and output. That orders of this character are invariably sent either to Belgium or Germany has long been a reflection upon the manufacturers of the United States who make a specialty of railway material. The subject is again mentioned in order to impress upon the minds of such manufacturers that there is always a good market in this country for track material of this character, and there is no reason whatever why orders should go to Europe when they could be filled in the United States, if only ordinary enterprise was manifested in the matter of meeting the requirements of the mine owners and hacendados. As to the specifications of these requirements and the indifference of Northern manufacturers with respect to supplying them, the following paragraph from the *Mexican Investor* is quoted with approval and indorsement:

"Although the proportion of Mexico's importations from the United States as compared with the total from all other countries is constantly on the increase, there is one item on which American manufacturers at the present time seem unwilling or unable to compete in prices with European countries. This item is portable track for haciendas and mines. Many of the largest haciendas in Mexico are putting in complete systems of light track extending to all parts of their properties. The same may be said of many mines. This track usually consists of 4½ or 6 kg. rail, easily laid and easily removed from one place to another when necessary. Practically all this track now comes from Europe, and this is likely to continue unless American mill owners awaken to the situation."

The writer of the foregoing has not reflected upon the existing conditions in the United States and the plethora of orders upon the books of the mills, which make manufacturers of railway material indifferent to side issues of this class. The matter, nevertheless, is worthy of being borne is mind. A day may come when "rush" orders for rails will not be so plentiful as they are to-day.

The Business Situation and the Railways.

The members of the Silver Commission are at work, but apparently the business interests which are likely to be more or less seriously affected by legislative action which may result in consequence of the Commission's recommendations are undisturbed by any shadow of an undesirable financial adjustment. Perhaps this is because business men believe that any adjustment will be preferable to continued perplexity as to the international value of the monetary unit. The country is enjoying general prosperity. New capital is continually coming in and being invested in establishing industries hitherto nonexistent, or applied to the acquisition and expansion of others already in operation.

There is much activity in the mining districts of Durango, Coahuila and Chihuahua. New claims are continually being denounced. Improved methods in mining and the brisk movement in development work are fairly indicated by the steady increase in the imports of machinery. In important new railway construction, however, there seems to be a temporary lull. The Mexican Central Railway Company are building two or three extensions—one being to the Pacific Coast. The betterments long under way on the National Tehuantepec Railway are nearing completion, but much work is yet to be done at the two terminal ports. The National Railway Company are striving to complete the standardizing of their track by July 4. Projected extensions of primary importance, such, for instance, as a branch line of the International from Durango to Mazatlan, which has long been in the air, are not much talked about now. The uncertainty with regard to the future of silver may or may not have a bearing upon the matter, although it is a fact well known that, of all the interests involved, the railway companies are much the hardest hit by the depreciation of the peso.

Construction work is being pushed on the Kansas City, Mexico & Orient Railway, the terminus of which is the Pacific Coast port of Topolobampo. Arthur E. Stilwell, the president of the company, and a number of Kansas City people interested in this enterprise, are at present in the capital. Mr. Stilwell announces that 36 miles of the track east of Chihuahua are completed and ready for traffic, and that in six weeks' time 80 miles of the line from the Coast east will be finished, while in the United States 100 miles from Wichita, Kan., southwest into Oklahoma, have been completed. Complaint is heard among railway builders that their operations are hampered by the delay suffered in the shipment from the United States of necessary material.

Opening of Congress.

Congress met on the 1st inst. In his address to the Chamber, President Diaz reviewed at length the relations existing between the country and the outside world, and made a comprehensive and intelligent survey of the Republic's progress, and of the work of the various governmental departments. Referring to new industries, the President said: "Subject to the law ruling this point, three new concessions have been granted for the introduction of as many new industries into Mexico. One of these is for the manufacture of steel by the Bessemer process; another for the construction of railway cars, and the third for the exploitation of lithographic stone."

Of the mining industry he said: "During the first half of the fiscal year 2247 title deeds, embracing 30,320 hectares, have been issued. Concessions have been granted for four new metallurgical works in the States of Hidalgo, Chihuahua and Sonora." President Diaz thus summarizes the increase in railway construction: "The increase in the railway system is 406 km., contributed as follows: Mexican Central, on the Panuco division and line from San Pedro de la Colonia to Paredon, 144 km.; Mexican Eastern, 116 km., and the remainder has to be credited to other lines. The aggregate length of the railway system is 15,486 km., and when the railways belonging to the States and private persons are added, the grand total is 17,756 km. The Vera Cruz & Pacific is almost completed, the only thing lacking being the connection with the Tehuantepec National Railway at Santa Lucrecia. The progress that has been made in the consolidation and betterment of the last named road (the Tehuantepec), with a view to adapting it for the important services which it is destined to render, is noteworthy."

Industrial Notes.

Imports for the month of December, 1902, included: Machinery and apparatus, $833,834.12; vehicles, $163,337.75, and arms and explosives, $161,111.66. These are gold values. The total value of the imports for the month named was $6,780,813.87. For the corresponding month in 1901 the aggregate was $5,888,989.45, an increase of $891,824.42 in favor of the month of December, 1902.

It is rumored that the consolidated railway systems of the State of Yucatan, which are owned by capitalists of Merida, the capital, and are paying good dividends, are being negotiated for by a syndicate of United States capitalists. Commenting upon this rumor, the *Mexican Herald* says: "It is probable that, if there is any truth in the report, the New Yorkers will be made to pay a pretty penny for the property if they are really bent upon acquiring it, for the business men of Merida are shrewd and are noted for driving a hard bargain."

The Mexican demand is brisk for oil well, electric light and sugar mill equipments and machinery. Large orders have been placed in the United States lately for outfits of the character indicated.

Petroleum is reported as having been struck in the State of Vera Cruz upon lands belonging to the Vera Cruz & Pacific Railway Company, who have been drilling wells for some time past.

The Mexican Light & Power Company, Limited, a Canadian corporation, have just been granted a concession to develop hydraulic power from the Necaxa and

other rivers in the State of Puebla. The company purpose generating electric energy for the transmission of light, heat and power in the City of Mexico, a large undertaking. They will at once expend several millions of dollars in carrying out their plans. The headquarters of the company are in Montreal. W. G. Ross, the treasurer of the company, and Hugh L. Cooper, chief engineer, are at present in the City of Mexico making preliminary arrangements to start the work.

The Mexico City Electric Railway Company have ordered ten passenger cars from the St. Louis Car Company.

There is a growing demand for cash registers in this country. The National Cash Register Company of Dayton, Ohio, find an increasing call for their specialty here.

The Vera Cruz & Pacific Railway Company have recently placed orders in the United States for 250 freight cars and 13 locomotives suitable for their traffic in the hot country. This railway traverses the garden section of Mexico, and promises to develop into a great and profitable system.

An advertisement in a Mexican paper reads: "Stoves set up and repaired," which seems to furnish evidence that the merits of cooking and heating stoves are becoming known here, as evidently foreign residents alone can scarcely be responsible for the advertiser's enterprise.

In the exports from Mexico to foreign countries during the first six months of the current fiscal year lead to the value of $2,640,294 appears; in the corresponding period of the previous fiscal year the total value of lead shipments was $2,237,928. Of copper, 27,726 tons were exported in the first five months of the fiscal year; this was an increase of 9701 tons over the total for the first five months of 1901-1902.

The rate of exchange for the payment of import duties during the month of April has been fixed by the Minister of Finance at 249.60 per cent.

The Monterey Iron & Steel Company intend to build a broad gauge railway from Neuvo Laredo to the coal deposits at San Enrique, which they recently acquired. In addition to mining the coal for use at the works at Monterey, the company will ship the fuel to interior points in Mexico, where coal is scarce and dear. The $100 shares of this company, upon which $80 have been assessed, are selling at $126. J. J. D.

The Southern Supply and Machinery Dealers' Association.

The second annual convention of the Southern Supply and Machinery Dealers' Association, at New Orleans, showed a flattering growth of the organization, which although only a year old now numbers more than 50 members.

The business of the sessions ran through three days, Wednesday, Thursday and Friday, April 8 to 10. A number of social features were on the programme, including a steamboat ride on the Mississippi River, a theatre party, trolley rides and a Creole dinner at West End.

The convention was called to order on Wednesday morning by the president, C. B. Jenkins, of the Cameron & Barkley Co., Charleston, S. C. Secretary C. B. Carter, Knoxville, Tenn., was at his desk, and delegates from the following States were present: Alabama, Florida, Georgia, Maryland, Missouri, Tennessee, North Carolina, South Carolina, Virginia, Louisiana and Texas. In addition, representatives from 26 manufacturing houses were in attendance. Many of these took part in the discussions.

President Jenkins made a welcome address, after which the Mayor of New Orleans gave the Convention a cordial greeting. An address to the manufacturers was delievered by John G. Christopher, of Jacksonville, Fla., and a response to this was made by Charles F. Aaron, of the New York Leather Belting Company.

President Jenkins in his annual report said:

"It may be of interest to some of you who have recently joined our ranks to know how rapidly our membership has increased. At our organization meeting in Charleston we had on the roll 18 members, at our special meeting in Memphis our number was about 32, and to-day we number 50. I mention these facts simply to show you that most of our efforts have been largely in trying to grow rather than to attempt any special policy that possibly with a small number we could not carry out—but with a large membership I believe we can accomplish proportionate results—and I see no reason why, at our next annual meeting, we cannot reach a membership of 75, which will practically mean 80 to 90 per cent. of the supply business in the Southern States."

The Wednesday afternoon session, which was executive, as most of the meetings were, was taken up with hearing and discussing reports. The report of the Executive Committee, as adopted, recited that some difficulty had been encountered in bringing the supply and machinery dealers of the South to a correct understanding of the Association's object. Some of the manufacturers are awaiting developments, although many have given the organization their hearty support. Continuing, the report said:

"Now that our organization has passed its formative stage we are ready to decide upon a proper policy through and from which we may hope to accomplish that for which our organization was brought into existence.

"The necessity for a clearly defined policy upon which our future work may be based in order that vigorous and effective efforts can be directed toward improving existing conditions, led your Executive Committee to present a plan at this time.

"The object of the Association shall be the promotion of more friendly business relations and mutual confidence and good will with each other and with the manufacturers; and to encourage and promote the commercial interests of the supply and machinery dealers of the South in every way possible; and to assist the manufacturers in deciding who are legitimate dealers in supplies and machinery, and who are entitled to prices as such; and to discourage the manufacturers from dealing direct with the consumer, but if any manufacturer finds it necessary to deal direct with the consumer in order to introduce and create a demand for his goods, he will invoice said goods through some dealer in the territory where the goods are sold."

At Thursday's session it was decided to hold the Convention next year at Old Point Comfort, Va. The association then elected the following officers:

P. E. Blow, of the Southern Brass & Iron Company, of Knoxville, Tenn., president.

Thomas Sloo, of the Whitney & Sloo Company, New Orleans, first vice-president.

C. H. Briggs, of the Briggs Machinery & Supply Company, of Dallas, Tex., second vice-president.

C. B. Carter, of Knoxville, Tenn., secretary and treasurer.

The Executive Committee chosen was W. H. Kettig, of the Milner & Kettig Company, Birmingham, Ala.; J. F. Donovan, of the Western Iron Supply Company, St. Louis, Mo.; R. Lee Lebby, of The Bailey & Lebby Company, Charleston, S. C.; J. A. Riechman, of the Riechman-Cosby Company, Memphis, Tenn.

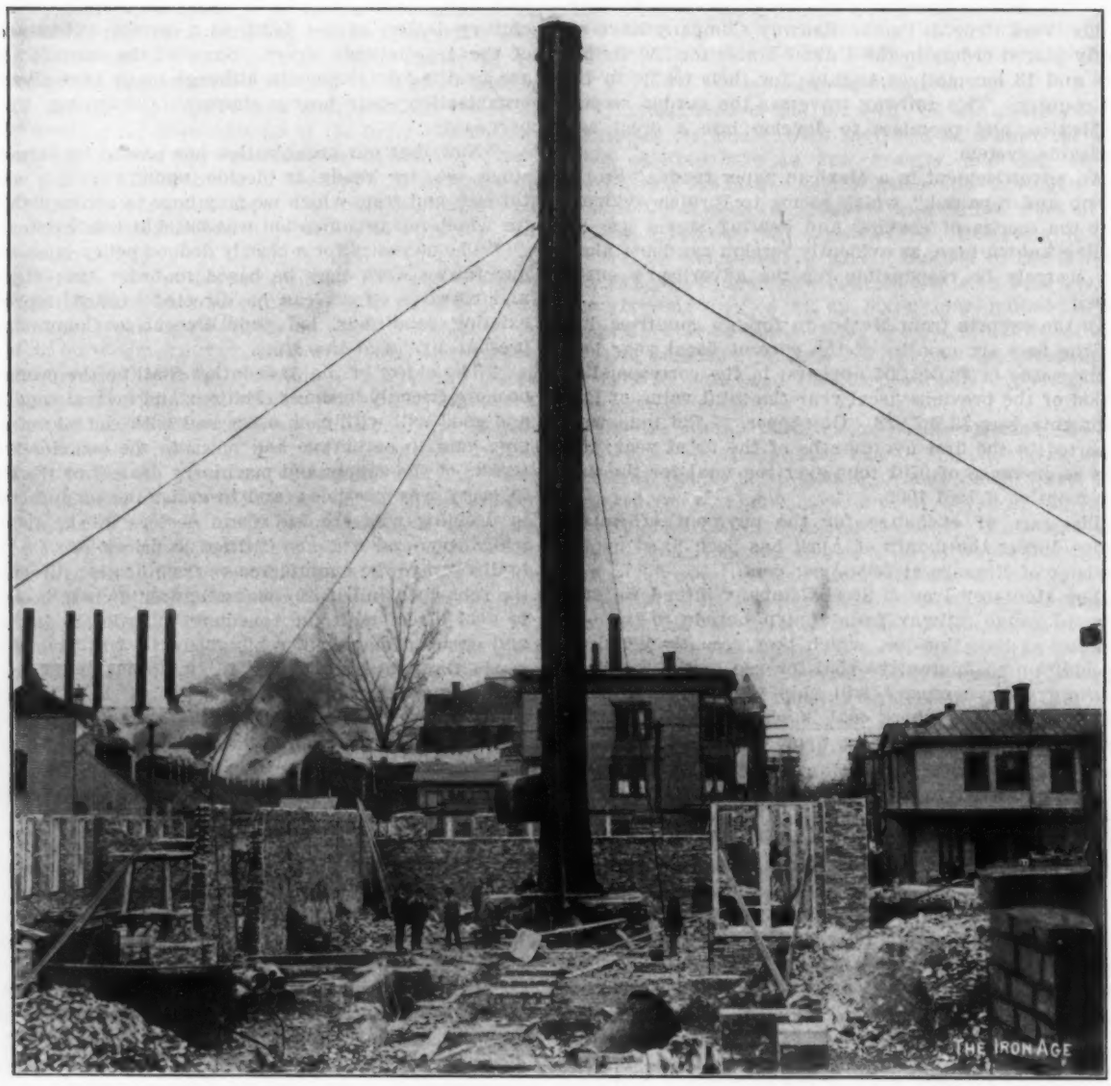
Chinese firemen seem to be immune to the fierce heat of the fire room on ocean steamers, and can stand up to temperatures that would speedily prostrate white men. On ocean express steamers these last lay off every third trip to recuperate, and have to get the very best food and large quantities of it, but a Chinaman will eat a quart or two of rice and hold his position in front of a forced draft that will sweep the coal off of the shovel so soon as it is presented at the open door. This qualification of the Asiatic fireman has been noted down by observers who see in it an opportunity to cripple the trade of their opponents by dissuading, through force, if required, Chinese firemen from shipping on English vessels, and an English paper has stated, upon competent evidence, doubtless, that without Chinese firemen the insurance rates would be so high that the vessels could not be run economically. There are over 60 lines of steamers trading with the Far East; out of this large number only three of them have European firemen, and these have to have coolies to assist them.

Moving a Large Steel Stack.

Some time ago the hat factory of F. Berg & Co. of Orange Valley, N. J., was totally destroyed by fire. The steel stack, 110 feet high and weighing 12 tons, was uninjured, and the new plans required that it be moved 175 feet from its original site. A few days since this work was successfully accomplished by Luther D. Martin, the engineer of the company, and the stack now stands upon its new foundation.

The first work was the fastening of an iron band near the top. This band was formed with four eyes, equally spaced, and to the eyes were secured ropes which were to serve as guys to keep the stack in a vertical position during its journey. The free ends of the ropes were fastened to poles and trees in such a manner that they could be tightened or loosened as required. Two flags were placed at the top of the stack to serve, roughly, as gauges for noting the direction and force of the wind. At a point about 60 feet from the ground a similar band was attached, and to the eyes of this band were fastened steel cables, which were secured to the platform upon which the stack was moved, and which were tightened by turnbuckles.

The stack, having been freed from the holding down bolts, was jacked up and a crib work of heavy timbers built beneath it, as shown in Fig. 2. The timber ways upon which the platform was to move were then laid and carefully leveled up to make sure of their being perfectly horizontal and parallel with each other. A chain was carried around the base and under the cradle, and from this led a cable to a horse-power windlass. Signals had been arranged to insure the proper handling of the guys by the men stationed at the ends. The journey was made without a hitch of any kind. When over the new foundation the stack was jacked up free of the crib, the timbers were removed, and it was lowered upon the base. Bolting to the base completed the job.



By courtesy Newark (N. J.) *Evening News.*

MOVING A LARGE STEEL STACK

The Design of the New 13,000-Ton Battle Ships.

WASHINGTON, D. C., March 14, 1903.—The Construction Board of the Navy Department has taken up for consideration the question of the type of the two 13,000-ton battle ships authorized by the last annual naval appropriation bill. The characteristics of the 16,000-ton battle ships and the gunboats authorized by the same law have been described in *The Iron Age* and were determined by the board without much difficulty, but the 13,000-ton vessels present a problem not easy to solve.

The proposition to construct a 13,000-ton vessel on the stereotyped lines of a battle ship is open to serious objection in the opinion of certain members of the board. Such a vessel, loaded down with heavy armor and limited in speed by bunker capacity, guns and other equipment, would be obliged to fight any enemy's vessel which she might encounter, for the reason that she could not run away. Being much smaller, however, than the first-class battle ships of any important power, her chances of victory would be very small. For these reasons the board is considering the advisability of giving the new vessels the

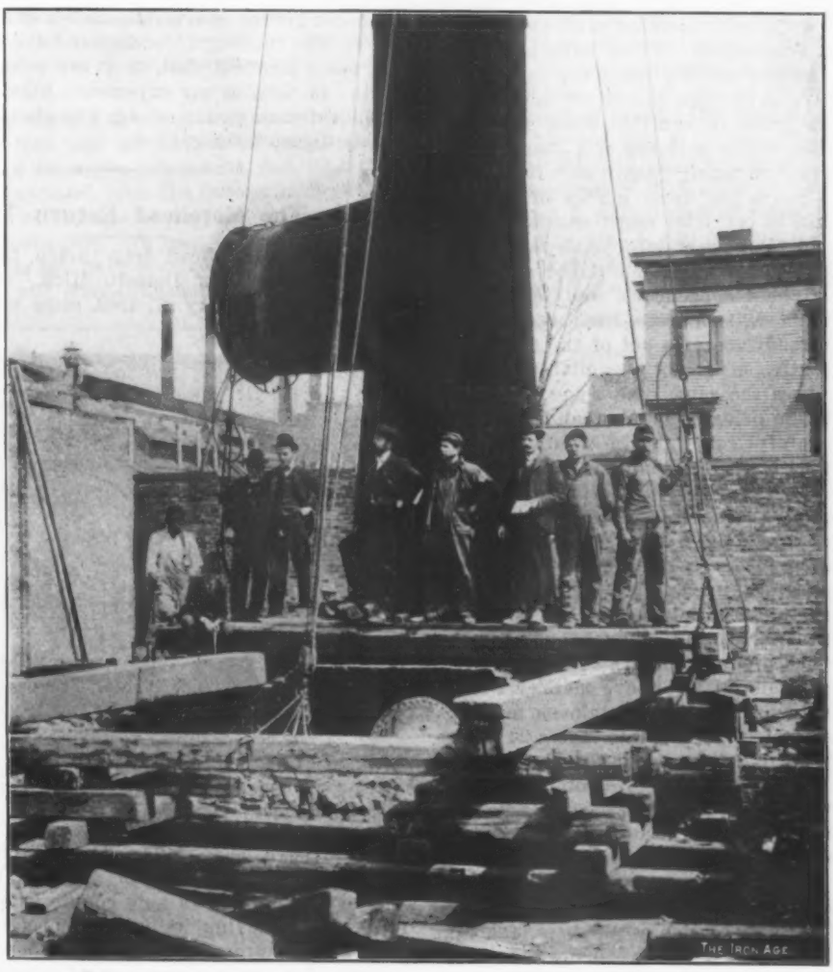
characteristics of armored cruisers rather than battle ships, although partaking sufficiently of the battle ship type to conform to the letter of the statute. Certain members of the board are disposed to urge that the new vessels shall be built on lines somewhat similar to those of the "Pennsylvania" and class, three vessels authorized two years ago, but with certain improvements calculated to increase speed and fighting efficiency. It is proposed to give the new vessels 21 knots speed and a bunker capacity of 2000 tons, and to protect them with main belts of armor 7 inches thick. Four 10-inch guns would be carried in the primary batteries, supported by 12 or 14 7-inch guns.

Should the battle ship type be followed the speed of these vessels would be reduced to about 18 or 19 knots, the thickness of armor increased to 8 or 9 inches and the caliber of the turret guns raised to 12 inches, while the coal capacity would be somewhat reduced. Those members of the board in favor of the cruiser rather than the battle ship type have examined with some care the design of the vessel just completed by the Armstrongs for the Chilean Government, "La Libertad," which is said to possess certain points of excellence in advance of anything of her size afloat. She is a 12,500-ton armored cruiser, with a speed of 19 knots and mounting 10-inch and 7.5-inch rifles, the latter a size unknown in the United States Navy, but said to be but little more efficient than the latest type of 7-inch navy rifle. The speed of "La Libertad" is conceded to be too low, but this could be increased by modification of lines and reduction of weights as well as by an increase in motive power.

In order to determine whether the new vessels shall be battle ships or cruisers the board has directed the Chief Constructor to prepare sketch plans of a vessel of each type conforming to the general requirements of the appropriation act but embodying every improvement in naval architecture that can possibly be incorporated for the purpose of increasing both speed and fighting power. These sketch plans will be ready in a few days, when the board will reach a final decision. Advertisements will be issued as soon as possible and the contract for the construction of the two vessels will probably be awarded during the current fiscal year.

The "Pennsylvania" and class, which are to be closely followed in the armored cruiser design, were planned to make 22 knots and to carry 2000 tons of coal. The arrangement of the armor in these vessels is of special interest, as it is likely to be followed if the cruiser type is selected. There is a water line belt 7 feet 6 inches in width extending the entire length of the vessel. For a distance of about 244 feet abreast of the engines and boilers the armor is 6 inches in thickness, tapering to 5 inches at its lower edge, but in the new vessels it would taper from 7 inches to 5½ inches. Above the main belt the sides of the "Pennsylvania" and class are protected by 5-inch armor for a length of about 232 feet. Transverse armor 4 inches in thickness is to be worked in at the ends of this 5-inch side armor, thus forming a central casemate for 10 6-inch guns, the caliber of which in the new vessels would be increased to 7 inches.

W. L. C.



By courtesy Newark (N. J.) *Evening News.*

Fig. 2.—View Showing Supporting Crib.

MOVING A LARGE STEEL STACK.

A certificate of incorporation has been filed by the Fillmore Avenue Foundry & Iron Works, at Buffalo, N. Y. The company are capitalized at $50,000, and will manufacture castings and finished products in iron.

Open Hearth and Crucible Steel.

BY JAMES J. MAHON, PITTSBURGH, PA.

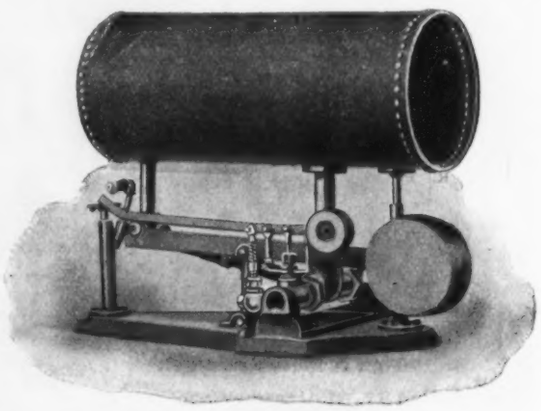
There are people who claim to be unable to find any difference in quality between crucible steel and open hearth steel. There are also people who cannot distinguish any difference between an oil painting and a chromo, but that does not make it conclusive that there is no difference between them. No doubt there are some paintings which are no better than chromos, and very likely there is some crucible steel manufactured which is no better than open hearth steel, but between the finest grades of both materials there is as much difference as there is between a hand made Swiss watch no larger than a 5-cent piece and a Waterbury watch. One is made by an artist and the other is at best simply a crude product in comparison. There have been men in times past who endeavored (by using the same class of materials) to make in an open hearth furnace a steel equal to the finest grade of crucible steel, but they failed. Any operation which partakes of a chemical nature is best performed in small quantities. In Europe for more than 100 years the finest grades of crucible steel have been made in crucibles which contain but 50 pounds of metal, and it is cast into molds which are about 2½ inches square. Why is this done? In order that the metal will be homogeneous, and by chilling quickly in the molds will be free from segregation. When the metal is ready to come out of the furnace it is handled very gently, so as not to agitate it in the least. The teemer uses the same care when pouring it in the mold, the stream being no larger than a lead pencil. Why is he so careful? Because he wants his ingot to be of uniform structure throughout, and he also wants to be careful that no slag is carried in with the stream. Why have not these manufacturers departed from this practice? Because they know from experience that they cannot do so without injury to their product. If this method is found necessary after years and years of experience in the manufacture of fine steel, it stands to reason that the further we depart from this practice the less homogeneous our product will be. Now, how can we compare a steel made in the above manner with a steel that is made in heats which contain as much as 100,000 pounds, and which are cast into ingots 24 inches square? We simply cannot, as the difference between them is too vast. We might be able to compare a high carbon open hearth steel with a high carbon Bessemer steel, but even in that comparison we are afraid we might meet with considerable opposition if we were to favor the open hearth steel too strongly.

While it is true that open hearth steel has been substituted for crucible steel for many purposes, the reasons for this are that in the first place many consumers found by experimenting a little that they were using a much higher grade of steel than was actually necessary to meet their requirements, and the second reason is that the crucible steel manufacturers, during the dull times, had been forced by competition among themselves into manufacturing a very low grade of crucible steel. So low was this product in quality that the consumers were unable to note any particular difference between it and open hearth steel. Right here is where the crucible steel manufacturers made the mistake. The demand for crucible steel would have increased in the same proportion as the demand for open hearth and Bessemer if the manufacturer had kept the quality of the steel up to what it should be when representing the crucible process. How many thousands of tons of crucible steel may have been manufactured from miscellaneous open hearth and Bessemer scrap in the past and have been sent broadcast throughout the country is only known to the manufacturers themselves. This class of steel is crucible in name only, and while it might be a little more free from blow holes, segregation and slag, it was no better in analysis or in reality than a fair grade of open hearth steel, and consequently for any purpose for which this grade of steel was found suitable an open hearth steel would answer the purpose equally as well. In many cases open hearth steel was substituted, which meant just so much less work for the crucible steel manufacturers.

At the present time there seems to be a slight reaction in favor of the crucible steel, partly because the open hearth furnaces are so busy on low carbon stock that they do not care to make the high carbon steel, and partly because they have been so very busy that some of them have been a little careless in regard to the uniformity of their product. A little carelessness of this kind always gets the consumer into difficulties. Another reason is that the crucible steel business is in much stronger hands now, and there is less competition in prices and consequently less desire on the part of the manufacturers to cut the quality of their product. While the manufacture of open hearth steel may be, as some claim, a business proposition, the manufacture of the finest grades of crucible steel is still an art, and the artists who thoroughly understand the business are not any more plentiful than they are in any other line of work. In fact, in my experience I have never met an intelligent man, young or old, who claimed to have thoroughly digested the subject.

The Morehead Return Traps.

Since the Morehead trap, made by the American Blower Company of Detroit, Mich., was described in our issue of February 27, 1902, some radical changes in its form have been made. A cast iron base had been substituted for the wooden platform previously used. The drum, or tank, is now counterbalanced by a lever and weight, having its fulcrum attached to the base. This is an improvement over the old movement, as the weight of the water has a greater leverage in starting the tank to tilt over, and, *vice versa*, the counterbalancing weight has a more powerful leverage to bring the tank back to its normal condition when the water is discharged. A slight change made in the construction of the vent to the trap has overcome the necessity for the equalizing pipe, which used to be on the outside of the drum.



THE MOREHEAD RETURN TRAP.

The Builders' Iron Foundry.—The Builders' Iron Foundry of Providence, R. I., have bought 9 acres of land on the water front at Bristol, R. I., with the intention of erecting a new plant upon the property, although nothing has been decided as to when this plan will be carried out. It is not the intention to abandon their present plant in Providence, for a portion of the business can be done to better advantage in the city. But for the heavier portion of the work the Bristol plant will afford exceptional facilities. The property is on the water front where the water is deepest of anywhere in the vicinity, which will permit large vessels to load and unload. Thus coal, iron, sand and other heavy materials may be landed direct from large vessels, and the heavy products of the foundry and shops may be as easily loaded aboard ships. The company have in hand a large order for gun carriages for the United States navy.

Foundry Accounting and Method of Estimating Costs of Castings.*

BY O. C. BARROWS, ACCOUNTANT, WITH A. CARPENTER & SONS FOUNDRY COMPANY, PROVIDENCE, R. I.

The subject of foundry accounting and methods of estimating cost of castings in a jobbing foundry is one that may possibly be of interest to all present to-day, while the fact that we shall not enter largely into the general methods employed in larger and more complex lines of business may seem to detract from the interest of some who are thus engaged. We take it for granted that it is absolutely essential that every one engaged in producing castings or, in fact, any manufactured article or product should be able to correctly estimate the cost of any form or kind of such product and quote a price for it that will enable him to secure the work in competition with other producers and at the same time insure a suitable margin of profit.

Necessity of Correct Systems of Accounting.

If you should look into the methods of our great life and fire insurance interests you would find that their prices and rates are based upon the lessons of experience drawn from years of business in the past, and experience should be the best teacher. We fear, however, that some of our foundries do not have such correct systems in actual practice as will enable them to gather in concise form to be of benefit the lessons taught them in the past. New business is offered. Some other foundry has made the castings for a certain figure. The foundry is anxious for the work, and the one to whom it is offered is sure that if A has made the work for 3½ cents he can make it for the same price, or shade it a little, and gets the job, only to learn at the end of the year at stock taking time that his balance sheet does not show what he would like to see.

I have in mind an instance within a year or two where, after making a line of castings for some little time, the accounts of the customer showed too small a margin of profit. The price being raised, the customer took the work to other nearby foundries, one of whom (upon the statement made by the party that the castings had been made for ½ cent per pound less than was actually the case) took the work at the lower figure named. After a few months the founder referred to called up on the telephone in relation to the work, &c., and then found that he was losing money on every pound made. Had he been using the system I shall outline he could have known at once that the castings could not have been made at the price and shown any profit whatever.

General Principles Applicable to Any Business.

Our subject to-day is somewhat simple in that we shall confine the methods to a jobbing foundry business in producing castings without any addition of a machine shop or other work than properly cleaning up and delivering the castings, while the principle underlying the methods shown may be properly applied to any business. I have found from experience in several different lines as an accountant that there are no book methods or suggested forms, &c., that will apply to every similar line of business, but each one must adapt them to his own or his employer's ideas. I suppose some of you have answered a ring of the telephone bell, and heard something like this:

"Hello."

"Hello, who is this?"

"This is the Progressive Foundry Company."

"Well, this is the Automatic Carriage Company. What is the price of castings?"

"Well, that depends. Prices vary according to the kind of work, style of patterns, &c. What class of work do you want?"

"Why, we want just ordinary castings, iron castings, and should think you could give us a price."

"Well, we will call and see the patterns, and talk the matter over with you."

Now comes the time when, having seen the patterns, we want to be enabled at once, by some simple method, to correctly estimate the probable cost of making the castings, to obtain the work and be assured the making of a living margin of profit. Our plan will be to place in the hands of the one who is to name the price certain basic prices, so that once ascertaining from a certain pattern five things—namely, 1, Weight of casting; 2, actual cost of molding; 3, actual cost of cores, if any; 4, cost per pound of iron, and, 5, cost per pound of all other foundry expenses of whatever nature, which we will term "general expense"—he will, after adding a suitable margin of profit, be enabled to name a price at which he can produce the castings and be reasonably sure of closing the year with a proper balance upon the right side of the ledger.

290

Received 190

	B. R.	Pc's.		Lbs.	Description	No. Load	Car No.	Remarks	

Form A.—Stock Received Book.

We do not claim this is anything new, and possibly some of you have a better plan, but we offer it as having proved very satisfactory in actual practice for a number of years. In connection with this is the use of a monthly inventory, which will show profit or loss practically as correct at the end of each month as yearly, when the accounts are all balanced and the actual inventory is taken.

Card Forms and Account Headings.

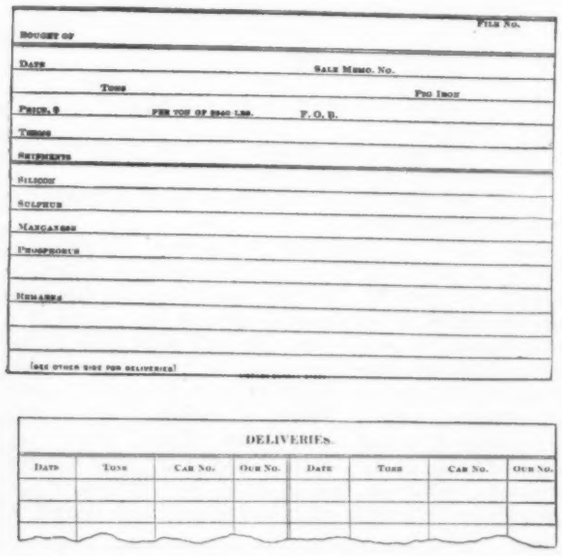
We hear a great deal said of late relative to "card systems," and we shall submit a variety of "card forms" that we have found very helpful in keeping track of the various items, articles and accounts necessary to one in this line of business.

With the regular system of books we have nothing to do in this paper except to say that they should be properly kept in what is known as double entry, with the accounts properly subdivided as demanded by the business, so that the accounts will show at a glance the purchases and cost of the different articles used: for instance, Iron, Sand and Clay, Fuel, Supplies, Teaming, Expense, Interest, Insurance, Labor, Laboratory, &c., as well as the customary plant accounts of Real Estate, Buildings, Fixtures, Machinery, Piping, Tools, Office Equipment, &c.

A book known as "Stock Received" (see Form A) should be kept, upon which should be entered daily all iron or supplies, of whatever nature, received in any department. Have the different clerks report tickets of weights, quantities, &c., in detail to the office, and when entered upon this book all invoices can be properly

* Read before the New England Foundrymen's Association, Boston, Mass., April 8, 1903.

checked up without asking any questions except where differences occur in weights or quantities. Pig iron, coke, coal and sand are some of the principal items to be kept account of in such a manner as to have all facts relative to them at one's finger ends. We suggest the following for this purpose:



BOUGHT OF — FILE NO.

DATE — SALE MEMO. NO.

TONS — PIG IRON

PRICE, $ — PER TON OF 2240 LBS. — F. O. B.

TERMS

SHIPMENTS

SILICON

SULPHUR

MANGANESE

PHOSPHORUS

REMARKS

(SEE OTHER SIDE FOR DELIVERIES)

DELIVERIES.

DATE	TONS	CAR NO.	OUR NO.	DATE	TONS	CAR NO.	OUR NO.

Form No. 1.—Purchase Memorandum.

Form No. 1 is a card for each purchase memorandum of pig iron, containing all facts in relation thereto, with name of seller, kind of iron, price, terms, shipments, analysis, deliveries, &c., to be filed in the card cabinet under the name of the seller. The opposite side of this card is ruled for record of deliveries, tons, car numbers, &c.

PIG IRON RECEIVED

Date	No. Car	Name	Lbs. Billed	Lbs. Rec'd	Lbs. Over	Lbs. Short	Price	Frt. P'd	Right of

Form No. 2.—Pig Iron Received.

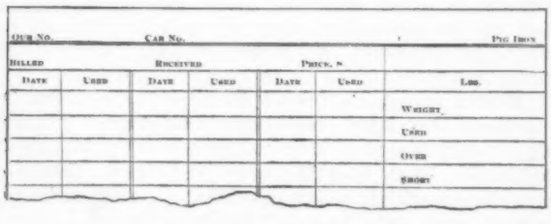
Form No. 2 is a card for pig iron received, upon which we enter as soon as advice is received the date of bill, number of car, kind of iron, pounds billed and file number of party bought of. This is ruled also for pounds received, pounds over, pounds short, price, freight paid, all to be filled in as iron arrives.

COKE RECEIVED

Date	No. Car	Name	Lbs. Billed	Lbs. Rec'd	Lbs. Over	Lbs. Short	Price	Frt. P'd	Right of

Form No. 3.—Coke Received.

Form No. 3 is a card for coke received, which is exactly the same as that for pig iron, Form No. 2. On these two forms can be readily seen at a glance the iron and coke in transit, whether received, on dock, when shipped, price, &c., without reference to all the invoices from a dozen or more firms.



OUR NO. — CAR NO. — PIG IRON

BILLED		RECEIVED		PRICE, $		
DATE	USED	DATE	USED	DATE	USED	LBS.
						WEIGHT
						USED
						OVER
						SHORT

Form No. 4.—Iron Car Receipts.

Form No. 4 is also used to keep track of each car of iron received. As each car is entered upon our books it is given a serial number of our own as well as the car number. This card shows billed weight, actual weight received, price, date and amount used in cupola, and when finished should show quantities over or short.

DATE	RECEIVED	USED	BALANCE	DATE	RECEIVED	USED	BALANCE

Form No. 5.—Scrap Iron.

Form No. 5 is used for scrap iron or any other material, showing the date received, used and balance on hand, to be entered up daily, weekly or monthly as deemed best.

Figuring the Cost of a Casting.

Now to ascertain the five things necessary to figure the cost of the casting wanted by the customer:

1. Weight of casting. This can be easily estimated, near enough for all practical purposes by rules well known to you all.

2. Actual cost of molding. This is to be determined in accordance with the best judgment and from experience.

3. Cost of core in the same manner.

4. Cost of iron per pound. The iron account cost should be made up monthly from the daily record kept at the cupola by the person in charge, showing the kinds, number of car and quantities of pig iron, scrap and sprues melted, as well as the fuel used. These amounts figured at the cost of the material delivered in the yard, divided by the number of pounds of good castings made for the month, will give the cost per pound of iron for the castings made, although, in figuring work on which a price is to be quoted, the market price of the pig iron must be taken into consideration, and particularly if you were fortunate enough to have bought your supply before an advance. The sprues will be left out in the figures, and only taken into account at the annual inventory.

5. Cost per pound of general expense. This we will base upon the total of the year or month just passed, having the exact price per pound in detail made up as follows:

Labor.—Sundry labor, office help, &c., wareroom, cleaning up and shipping, foundry help, laborers and salaries.

Other Expenses.—Sand and clay, fuel, supplies of all kinds, teaming expense, gas and electric lights, power, &c., interest, insurance, laboratory and any other items of expense whatsoever. The total of these different items will make up the "general expense account."

Making Up the Monthly Account.

In making up the monthly account to show profit or loss we will proceed with a plan which has been found after several years of experience to tally very closely with the actual results of the annual stock taking and balance sheet. When the books have been properly balanced and proved correct, the ledger balances are drawn off on a sheet similar to Form B, all plant accounts being carried, as shown, on the balance sheet.

The iron, sand and clay and fuel accounts are to be inventoried as follows:

Iron: Balance inventory January 1..... $.....
Add invoices received in January..... .....
Less iron melted in cupola in January..... .....

Leaving balance iron on hand January 31..... $.....

Deduct this balance from the total ledger balance January 31 and the difference is the amount to charge to Profit and Loss account for the month.

Sand and Clay.—Taking the previous year we find the total cost of sand and clay. Divide this cost by the total pounds of good castings made, and the cost per pound shown we use all through the current year to get the monthly amount used and inventory:

Balance inventory sand on hand January 1..... $.....
Add received during January..... .....

Total..... $.....
Good castings made in January, ... pounds, at cost last year per pound, equals..... $.....

Leaving balance inventory January 31..... $.....

The difference between this inventory and the inventory but little in the value of stock on hand, unless some heavy purchases are made during any one month, when the amount can be easily arranged to spread over several months in making up the monthly account.

In closing the monthly inventory, account should, of course, be taken of wages due help at the end of the month and unpaid.

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BALANCE 190

Land		Capital Stock	
Buildings		Purchase Ledger	
Fixtures and Machinery		Notes Payable and Mortgage	
Shafting, Pulleys and Hangers		Private Accounts	
Piping		Wages due Help	
Belting			
Flasks			
Movable Tools		Surplus	
Iron			
Sand and Clay			
Fuel			
Laboratory			
Insurance			
Expense			
Interest and Discount			
Teaming			
Merchandise			
Cash on hand and in Bank			
Notes Receivable			
Private Accounts			
Sales Ledger			
Total		Total	

PROFIT AND LOSS

Iron		Merchandise	
Sand and Clay		Rent	
Fuel			
Laboratory			
Insurance			
Expense			
Interest and Discount			
Teaming			
Taxes			
Labor			
Wages due Help			
Salaries			
Gain			
Total		Total	

Form B.—Monthly Inventory.

tory or ledger balance January 31 to be charged to Profit and Loss account for the month.

Fuel.—Account to be ascertained easily by taking inventory at January 1; add cost of fuel received in month; deduct amount used as per account from cupola record, leaving balance to be carried to new account.

Supplies, expense and sundry other accounts for the purpose of the monthly inventory may be carried each month at the same value as at January 1, as they will

On the first day of the month an inventory must be taken as closely as possible of the pounds and value of castings on hand, this being the only item in which it is necessary to take an actual account for this purpose. To ascertain the pounds of castings made:

Take pounds on hand January 1..... .....
Take pounds on hand February 1..... .....

Showing a difference of ——— pounds, either made for stock or taken out of stock.

Arriving at the Cost.

Taking the actual number of pounds of castings shipped during the month, add or subtract the difference in stock on hand, and the result will be the number of pounds made. Divide the value received for pounds shipped by the pounds shipped and you will have the average price per pound received.

Divide the cost of the iron melted in the cupola by the number of pounds of castings made and you have the cost per pound for the iron used. Now divide the cost for each item of expense, labor, sand, fuel, &c., by the number of pounds of castings made and you have the cost per pound of each item. Adding all these items together we obtain the cost per pound for general expense:

Now taking the cost per pound of iron..... $.....
Add cost per pound of general expense..... .....

We have total cost of iron and general expense... $.....
Add cost of molding and cores..... .....

We have total cost per pound for castings made.. $.....
Summarized: Received per pound..... $.....
Cost per pound..... .....

Gain per pound..... $.....

Multiply the pounds made by the gain per pound and the product will show the total actual gain, which should closely agree with the amount shown in making up the same from the ledger account. In our figuring we have carried out the prices per pound to seven decimals, but five will answer all purposes.

Thus there should be no difficulty in knowing within a few days from the first of each month whether the business has produced satisfactory results or the opposite.

Keeping Individual Customers' Records.

There is a method also, based upon the same lines as above, for keeping a record of each individual customer's work, showing whether we make a satisfactory gain upon it or not. For this purpose have your order books ruled something like Form C, showing the number of castings ordered, description, weight of single piece, total weight, cost of molding single piece, total cost of molding, cost of cores single piece and total cost of cores. These items, properly figured out and summarized each month, are entered upon a blank similar to Form D, showing name,

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Number of Pieces Delivered		Weight single piece	Total Weight	Cost of Moulding single piece	Total Cost of Moulding	Cost of Cores single piece	Total Cost of Cores		

Form C.—Order Book.

Multiply pounds by cost of iron and general expense, as shown by the previous record for the month or year, add the cost of molding and cores, and you then have the total cost. Multiply the pounds again by the selling price per pound and subtract the cost and you will have the gain or loss in amount. Divide this amount by the cost and you have the percentage of gain or loss.

This is then entered upon a book or card ruled something like Form E, each customer occupying a separate page. At the end of the year the amounts of each month are added and an average percentage of gain is shown for the entire year.

Upon another series of pages in the same book (see Form F) these facts may be entered each month, so that one can see at a glance upon one or two pages the total number of pounds ordered by each customer, the amount total pounds, cost of molding and cost of cores. This is handed into the office by the clerk in charge of the order books at the end of each month. These sheets are then figured as follows:

_____ 190

	LBS.	COST MOULDING.	COST CORES.
CASTINGS			
PRICE			
COST			
GAIN			
PER CENT			

Form D.—Cost Blank.

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DATE	LBS	IRON AND EXP	COST MOLDING	COST CORES	PRICE PER LB	SELLING PRICE	COST	GAIN	LOSS	PER CENT

Form E.—Cost Book.

received for the same, the cost, the gain or loss and the percentage of gain or loss. If a customer has several distinct grades or classes of work, these can be separated and the results shown upon each. In this way careful

watch can be kept upon different kinds of work, the unprofitable and undesirable weeded out, and methods taken to cheapen the cost of others. A check upon the method of estimating is constantly kept, by comparison with actual results as inventories are carefully taken and accounts closed.

We do not claim this system as outlined to be infallible or applicable in its present form to all jobbing foundries, but where the work done is of an average class, as, for instance, all light work, all medium work or all heavy work, the foregoing may, with slight changes, be made to apply in any such shop. Should a foundry do all classes of work, then it would be necessary with this system to keep a separate record of the classes. You will note that we do this, as shown on Form 8, subdividing our product into two classes, one of which is machine castings and calling all others miscellaneous castings.

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NAMES	LBS.	SELLING PRICE	COST	GAIN	LOSS	PER CENT

Form F.—Cost Book.

NAME NO NO
ADDRESS
DEPT
OCCUPATION

Age	Married	Single	Children	Nationality
Date employed				
Left employ				

Cause	Wages per Day		Date

Retired
Accident
Remarks
References (See other side)

Form 6.—Employee Record.

If in figuring heavy work you should add the same general expense per pound as is necessary in figuring light or medium work, it might result in losing the job, for a foundry running 20 molders on heavy work would melt, say, 20 tons per day, while a foundry doing light work and employing 20 molders might melt only 3 tons per day, and naturally the general expense per pound would be much more on the light work than on the heavy. However, as said before, this can be easily overcome by classification and a little more detail.

Card Forms for General Information.

We make use of other card forms as accessories in showing results and tabulating information, which while not necessary may be found very useful. Card Form No. 6 is used to keep a record of every employee, but more especially of molders and skilled help, showing all the facts necessary, and filed alphabetically in two lists, one of help at work and the other of all who have previously worked in the shop. A file should also be kept of such applicants for work as may seem desirable, with their references, &c. Such a record of help is often found very handy when accidents occur and facts are needed at once about the man, his residence, age, &c.

Card Form No. 7 is a weekly statement complied from the pay roll showing the subdivision of all help, average earned per hour, ratio of each room or department to total labor and percentage of poor work. This can also be used for a monthly or yearly showing of the same facts.

_____ Ending 190 Hands Employed_____ Lbs. Made_____
Hours Worked_____ " Shipped_____

	Hands Employed		Day Work	Piece Work	Pay Roll		Pay Roll		Total	Average	Ratio to	%	No. 301	
	Day	Piece	Hours	Hours	Day		Piece		Pay Roll	per Hour	Total Labor	Poor Work	Poor Work	
SUNDRIES														
WARE ROOM														
FOUNDRY HELP														
NIGHT MEN														
MEN'S CORE ROOM														
GIRLS' " " Day														
" " " Piece														
FLOOR MOLDERS Day														
" " Piece														
APPRENTICES														
BENCH & SQ. MOLDERS Day														
" " " Piece														
MACHINE " Day														
" " Piece														
TOTAL														

Form 7.—Weekly Pay Roll Record.

In this way a constant watch and comparison may be kept by the employer upon the ratio of any one department as compared with the total wages paid.

Should the cost of cleaning and shipping a certain number of pounds of castings be 10 per cent. of the total

Monthly Statement			
Pig Iron Melted lbs.			
Scrap " "			
Stove Plate " "			
Sprues " "			
Total lbs. "			
Mach. Castings made			
Misc. " "			
Total lbs. " "			
Castings shipped G. F. Ex. Co.			
" " all others			
Total lbs. Castings shipped			
Poor Castings returned lbs.			
Per Cent. Poor Castings returned			
Ratio Good Castings to Melt			

Form 8.—Monthly Product Statement.

pay roll one week, and the following week prove to be 12½ per cent., attention would at once be called to the difference, and an examination instituted as to the cause, and if more help has been required to do the same work a remedy can be applied.

Card Form No. 8 is a monthly statement showing pounds of pig iron, scrap, sprues, &c., melted, pounds of castings made, shipped, poor castings returned, both in pounds, and percentage and ratio of good castings to iron melted. On this one card may be shown the record for an entire year.

Card Form No. 9 is arranged to show at a glance the cost per pound of castings made for each room or department, the ratio of labor of nonproducers to producers, cost per pound for cores made and some other items of interest. Two months are shown upon one card.

Card Form No. 10 has upon one side a general cost statement to be made out each month, showing in detail the amount in dollars and cents and also the cost per pound for castings made of each room or department of labor, as well as all items of sand, fuel, supplies, &c., in such subdivision of the same as one may decide best for his own particular use. Upon the reverse is a summary or recapitulation of the business, showing the results of the business in dollars and cents, cost, average selling price, gain per pound, &c. This card contains four months' business, and will furnish condensed information that cannot fail to be of interest to every business man or officer of a corporation.

Another use of the card system which may be found very useful in this or any other line of business is with cards similar to Forms Nos. 11 and 12. These are used to keep a record by name of articles of all supplies, tools, &c., purchased. As invoices are received, an entry is made upon the proper card. For instance, "riddles" will be the heading of one card, upon which will appear date of purchase, quantity, description of kind, price and file number of party from whom purchased. Another card will be used for nails, another for brushes, one for gas bills, electric light, stationery, &c. Thus at any time one can refer instantly to the proper article asked for and note the date of the last purchase, price paid, whom from, &c., while at the end of the year the total purchases of such articles are shown at a glance with whatever variations in prices have occurred. At stock taking time one has prices ready at hand for any article needed, as every purchase is here recorded.

Perhaps I should say in passing that we use the vertical system of letter filing, with a file number for every customer, and with a card index of the same, so that there is but one place for the letters or invoices of any one party, which is under the file number first given him when entered upon the books. Such number is used upon all cards indicating the one purchased from. The printed forms of cards for such use, as above, may be varied to suit one's particular ideas or business.

We also use the card system again for prices of castings and quotations made. It is very elastic, can be enlarged to any size, old and discarded customer's cards can be taken out and the file kept always fresh and easily referred to.

Month of 190							Ratio N.P. to Pro.	PRODUCERS			
	Sundries	Ware Room	Foundry Help	Night Men	Men's Core Room	Girls' Core Room	Girls' Core Room	Floor & Bench Molders	Machine Molders	Total	
Cost Misc. Castings per lb.											
" Mach. " " "											
Total Cost " " "											
Cost Cores Misc. C'st'gs " "											
" " Mach. " " "											
Ratio Labor to Cost Misc.											
" " " " Mach.											
" " " Total Cost											
" " Non Pro. to Pro.											

	Pounds	Cost		Pounds	Value
Misc. Castings Made			Misc. Shipped		
Mach. " "			Mach. "		
Total " "			Total "		
Total lbs. Melted			Misc. Returned		
			Mach. "		
			Total "		

Form 9.—Monthly Record Sheet.

Expense of Keeping an Elaborate Cost System.

I notice some criticisms in recent publications as to the expense of keeping elaborate cost account systems, and some of you will ask how much labor is required to keep such a system as I have outlined. This will, of course, depend somewhat upon the extent of the business, number of hands employed, &c. I would simply say that in a jobbing foundry melting 25 to 30 tons per day and employing 150 to 200 hands, one clerk a part of the time, in addition to the regular force employed, should be easily able to keep the work well in hand.

I would ask in closing, and leave for your consideration the thought, whether, if some such basis of estimating and keeping cost in neighboring foundries were in vogue in all, there might not be better results, prices better regulated, less friction between customer and seller? In every case the foundryman would feel that he was meeting fair competition, and that his success would demand the best facilities, best apparatus, best help, modern appliances and close attention to details, while the figures kept and shown as indicated would prove and confirm from week to week the results of his efforts.

Summary General Statement

	Amount	per lb.	Amount
Cost of Iron			
" " Gen. Exp.			
" " Iron & Gen. Ex.			
" " M'ld'g & Cores			
Total Cost			
RECEIVED			
COST			
GAIN			
Total Surplus			
Lbs. Castings Made			
" Iron Melted			
Per Cent Good Castings			

General Cost Statement

	Amount	Cost per lb.
MOLDERS		
MEN'S CORE ROOM		
GIRLS' " "		
TOTAL		
WARE ROOM		
FOUNDRY HELP		
SUNDRIES		
SALARIES		
TOTAL		
SAND AND CLAY		
FUEL		
SUPPLIES		
REPAIRS		
EXPENSE		
TEAMING EXP.		
LABORATORY		
INTEREST		
INSURANCE		
TOTAL		
IRON		

Form 10.—General Cost Statement.

DATE	QUANTITY	DESCRIPTION	PRICE	FILE NO.

Form 11.—Supply Purchases.

DATE	QUANTITY	PRICE	FILE NO.	DATE	QUANTITY	PRICE	FILE NO.

Form 12.—Supply Purchases.

For a week or two copper has been stored on docks and at smelters at the lake, awaiting vessels, which were expected immediately. Previous to the expected arrival of ships there was no accumulation, as rail shipments had been large all winter. The March production exceeded all records, being nearly 9000 tons, or at the rate of over 200,000,000 pounds for the year. The new "south range" mines contributed very largely to the increase, and bid fair to make a great showing this year. Such has been the changed attitude of lake owners of copper stocks that it is hard for Boston to absorb the stocks offered and to hold up prices. The lake owners of copper stocks are selling out their home coppers rapidly, and are buying into all sorts of speculative deals in Arizona, especially near Bisbee. The phenomenal success of the Calumet-Arizona Company in that section has started a wild boom, and the desert is staked for miles with claims that are valued highly.

Central Pennsylvania News.

HARRISBURG, PA., April 11, 1903.—The manufacture of iron continues on a large scale in Central Pennsylvania. All of the stacks in operation a week ago are still in blast, and the Pennsylvania Steel Company, with mills at Steelton, placed their No. 2 furnace in blast this week after an idleness of about two months for repairs. The output at Steelton has been delayed this week by a shortage of coke and a number of other Central Pennsylvania furnaces have been hampered for the same reason. This condition, however, is not general, as the Central Iron Works of this city have more fuel than can be handled with their storage capacity. The Central mills are working on increased orders for the American Car & Foundry Company and for the United States naval stations, but were delayed this week by the break down of a 500-horse-power engine. The Steelton mills have also received an impetus, and this week increased their working force to 8152 men. These mills are to a degree affected by the prosperity of the Maryland Steel Company, who were this week awarded the contract for the construction of a dry dock for the United States Government in the Philippines at their bid of $1,120,000. The dock is to be delivered to the Government on the Atlantic Coast within 27 months. The Steelton mills will be in no manner affected by the demand for increased wages by blast furnace workers, as there is no union there. Manufacturers of agricultural implements, engines and pipe in this territory are in many cases working more than full time, and all report increases of business over orders of last year.

The Duncannon Iron Company of Duncannon have brought an action of ejectment against Earl H. Kennedy to force him from a tract of land in Wheatfield Township, Perry County, claimed by the company.

E. J. S.

Rumors are current in Philadelphia that the Eastern Steel Company of Pottsville, Pa., are negotiating for control of the Tidewater Steel Company, Chester, Pa.

President David M. Parry's Annual Report.*

[The report being too long for complete reproduction, an abstract has been made, giving the leading features as follows:]

The eighth annual convention of the association meets under auspicious conditions. The country is still in the full enjoyment of that peace and prosperity which have made the last few years so notable, and the coming year gives no indication of reaction in the tide of industrial activity. In the light of the general prosperity it is all the more a pleasure to note the prosperity that has come to the association. Not only has its membership increased by leaps and bounds, but success has attended its efforts in many directions. With over 2000 manufacturing establishments of the country on its rolls, as compared to less than 1000 a year ago, the association has become more than ever the unrivaled organization of its kind in the world. It stands to-day as the most efficient mouthpiece of those whose capital is invested in productive enterprise. It stands as a bulwark of progress and as a foe to every agency or force that, through ignorance or deliberate intent, would check industrial development or wreck our free institutions on the rocks of economic fallacy.

The influence the association has exercised during the past year on the course of national legislation and public thought has been large and wholesome, furnishing signal proof of the power of organization and vindicating its usefulness, not only to its members, but to the country as a whole. Largely through its endeavors the new Department of Commerce has been created, and another measure of vast importance, the Isthmian Canal Bill, to which it gave its hearty support, has been enacted into a law since our last convention. The association also vigorously opposed the eight-hour and anti-injunction bills in the last Congress. The defeat of these measures may, in our opinion, be justly credited to the hearty cooperation of our members in the campaign waged against the bills. The fight made against the bills involved a contest with organized labor, which fathered them, and an agitation was inaugurated against an organization which would demand such un-American legislation. This agitation has been far reaching and has produced a distinct change in current sentiment, as indicated by the press and public utterances of prominent men. While the association has obtained tangible results in other directions aside from those mentioned, yet this contest with organized labor will appear to many to be an overshadowing feature of the past year, and its consideration will, therefore, be given first place in this report.

ATTACK UPON THE SOCIAL FABRIC.

The introduction in Congress of such measures as these and the support they received there and from the press and public can only be regarded as ominous manifestations of the deep seated power of an organization which in late years has had such an insidious growth that we find it dominating to a dangerous degree the whole social, political and governmental systems of the nation. Who can take note of the hundreds of strikes of the last year, of the many acts of aggression and ruthless violation of principles heretofore held dear by the American people, of the subservient and apologetic tone of many newspapers and public men toward those things, and also of the all too prevalent antagonism to capital, without being impressed with the gravity of the situation? If organized labor had succeeded in getting its two bills enacted into law, more measures of a similar character would have followed close upon their heels, and we would have found socialism stealing upon us at a rapid rate.

But, though the first victory has been won, the contest is by no means over. Though balked for the time being, organized labor continues to wax stronger in membership from day to day, and that it will renew the fight at the next session of Congress there can be no doubt. Our efforts, therefore, must not cease.

* Submitted to the Eighth Annual Convention of the National Association of Manufacturers, New Orleans, April 14, 1903.

SITUATION MUST BE MET.

It is true that the fight against organized labor is, in a measure, a departure from our former conservative policy respecting labor, but it is an inevitable departure if the association hopes to continue to fill the full measure of its possible usefulness to the manufacturers and people of the country. Heretofore organized labor has had only the individual employer to combat, but its growing power now demands a counter organization strong enough to resist its encroachments. A policy colored by a fear of engendering antagonism, a negative, passive attitude toward a movement which has already inflicted much injury to industrial progress, would prove ineffectual, meaningless and worse than no policy at all.

Once thoroughly alive to the true nature of this un-American institution, the people, I firmly believe, will place their stamp of disapproval upon it, and it will dwindle in power faster than it grew. Perhaps a new form of unionism will take its place—a beneficent unionism—for the right of the workmen to organize is not to be disputed, nor is it to be contended that, if conducted along right lines, their organizations have it in their power to accomplish good. The employers of this country have no quarrel with the men that work for them considered as individuals. The welfare of those who toil in our factories calls for our most earnest consideration. But what we must protest against is the unwarrantable usurpation of rights and the disastrous industrial policy which characterizes them in their present associated capacity.

THE INDICTMENT AGAINST ORGANIZED LABOR.

Organized labor knows but one law, and that is the law of physical force—the law of the Huns and Vandals, the law of the savage. All its purposes are accomplished either by actual force or by the threat of force. It does not place its reliance in reason and justice, but in strikes, boycotts and coercion. It is, in all essential features, a mob power, knowing no master except its own will, and is continually condemning or defying the constituted authorities. The stronger it grows the greater a menace it becomes to the continuance of free government, in which all the people have a voice. It is, in fact, a despotism springing into being in the midst of a liberty loving people.

It has not, in times past, hesitated to resort to violence and the destruction of property to compel the acceptance of its demands. Its history is stained with blood and ruin. Many a man whose only fault was that he stood upon his rights has been made to suffer outrage, and even death, and many an employer has been brought face to face with financial ruin. These wrongs cry unto heaven, and yet an unaroused public sentiment too often permits them to go unheeded and unpunished.

DESTRUCTIVE OF INDIVIDUAL RIGHTS.

It denies to the individual the right of being his own judge as to the length of time he shall work, and as to how much he shall do within the time prescribed. It takes no account of the varying degree of natural aptitude and powers of endurance displayed by individuals, and seeks to place all men in each particular trade on the same dead level as respects his daily output and his daily wage. Thus a premium is placed on indolence and incompetence, and there is a restriction of human effort, reducing the aggregate production and increasing the cost of the things produced.

It drives unwillingly men into its ranks by its policy of intimidation. Thousands of its members are such to-day, not because they sympathize with its purposes, but because they fear the consequences of not yielding to its tyranny. These men are, as a class, the more thrifty and capable of its members.

While it seeks to compel men already employed in the trades to enlist under its banner, it at the same time seeks to prevent outsiders from entering the trades. It foists upon employers rules limiting the number of apprentices, some unions going so far as to say there shall be no apprentices whatever. The boys from the farms now come to the cities and find the doors to the trades shut against them.

Organized labor is an organization of manual labor, trained and untrained, of men who do as they are told

and who depend upon the brains of others for guidance. That wide field of labor in which mental capacity is a greater or less requisite on the part of the workers is not represented by it, and cannot be for the obvious impossibility of organizing brains.

ORGANIZED LABOR IS THE GREAT MUSCLE TRUST.

Organized labor is particularly denunciatory of trusts, but what greater trust is there than itself? It is the grand trust of the times. It is the muscle trust, the trust of men who make their living by manual labor. It is to be hoped that, in accordance with the Nelson amendment to the Department of Commerce bill, the Government, in turning the searchlight of publicity on the trusts, will not forget organized labor. If any institution needs to be exposed to the limelight, it is certainly trades unionism. But it is not only a trust itself: it is a creator of other trusts—of capitalistic trusts, as distinguished from labor trusts. One of the leading causes for the formation of a number of the industrial combinations has been the necessity that has confronted employers to unite, that the exactions of labor might be more effectively dealt with.

ENGLAND BEING DESTROYED INDUSTRIALLY.

Many authorities agree that organized labor has struck a serious blow to the industries of England. It is a strange item of news to read that in these days of such abounding prosperity for this country thousands of men are idle in the city of London, due to the closing of factories and the falling off in shipping. It is the statement of many that high wage scales and union regulations have made it unprofitable to employ many men that might otherwise be given work. The English employers several years ago became aroused over the power of the unions, and have, through their organizations, been fighting to re-establish free conditions. That they are succeeding is evident from several important court decisions recently obtained, notable among which is what is known as the Taff-Vale decision, handed down by the court of last resort only a few months ago. The principal point in this decision was that the union is responsible for any damage or injury its members may cause during a strike under its direction, and in this case the Amalgamated Society of Railway Servants was forced to pay $115,000 as damages to the Taff-Vale Railroad Company. The decision is looked upon as one of the most important ever rendered, and that its effects will be far reaching there can be no doubt.

THE ANTHRACITE STRIKE.

The anthracite strike was one of the most important industrial events of recent years. A plentiful supply of cheap fuel being the first requisite for the development and continuation of the manufacturing industry of any country, it is obvious that an unnatural curtailment of the output of coal or an artificial inflation of its price must be a matter of deep concern to every manufacturer, as well as every citizen who has a regard for the welfare and prosperity of the country.

How great a calamity this strike was is difficult to realize. To the shortage in the fuel supply is directly attributable the extortionate prices that prevailed during the winter, not only for anthracite, but for soft coal. The operators and the railroads found it a physical impossibility to supply the demand, once work had again commenced, and the inevitable result was that thousands of householders and not a few manufacturers found themselves mulcted in large sums. Many of the larger consumers had made contracts for their fuel in advance of the strike, but a great many of these contracts were at figures in excess of the prices usually obtained. The enforced tribute exacted from the consumers of the country for the cause of organized labor in this strike reached up into the hundreds of millions of dollars, and the permanent tribute promises also to reach astonishing figures.

GOVERNMENT COMMISSION SUGGESTED.

The first and great question that presents itself is this: Is the natural law fixing wages to be superseded by artificial means for their regulation? If it is true that the natural wage law no longer operates to give each class of workers its just proportion of the products of labor, then would it not be well, for the good of the country, to have the Government establish a commission which would be able to do the thing in a scientific manner? Certainly it is a manifest folly to allow any mass of workmen to consult only their own cupidity as to what their wages shall be, and then, by the employment of arbitrary force, by the stand-and-deliver tactics of the highwayman, compel the rest of the country to come to their terms.

[After a severe arraignment of the anthracite miners' leaders and of labor conditions in Chicago, described as "the stronghold of unionism in this country," Mr. Parry proceeded as follows:]

AMERICAN FEDERATION OF LABOR.

Before closing consideration of the labor question, I think it advisable to refer specifically to the American Federation of Labor. This organization is the national congress of the labor power. It is the source whence proceeds such noxious emanations as the eight-hour and anti-conspiracy bills. It is also the fountain head of inspiration which breeds boycotters, picketers and socialists. The federation meets once a year and is composed of delegates from the various unions. It is said to represent 23,031 national, State and local labor bodies, claiming a membership of 2,000,000 of workers.

It would be a mistake to assume that the men in the ranks of the federation are responsible for the measures and doctrines for which it stands. If the truth were known it is probable that a great majority of the workers of the country have only a very crude conception of the eight-hour bill and other measures favored by this body. The policies and measures of organized labor should be laid at the door of the leaders of the labor movement.

THE BOYCOTT.

Two of the products of organized labor for which the American Federation evinces a lively solicitude are the boycott and the picket. The boycott is the celebrated scarecrow which labor keeps in its closet and threatens to bring out the moment an employer declines to admit its demands. It is the twin brother of the blacklist, and neither has any place in this country.

The boycott against the individual personally is one of the most brutal and despicable weapons ever used by bodies of supposedly civilized men. Where organized labor is strong a nonunion man is subjected to all manner of persecution and outrage. The number of men who are murdered each year because they refuse to obey the unions would make a significant statistical record. The organized persecution directed against the business of an individual or company—and this is the sense in which the term boycott is most frequently used—has happily, however, grown almost innocuous except where the unions dominate. The American Federation of Labor dishes out this class of boycotts by the wholesale at every convention it holds, and its leader goes about the country making specious pleas in their behalf. That the most of these boycotts are perfectly harmless is notoriously true, but it is not the fault of the federation that such is the case. That body declares the boycotts in the full desire that they will ruin the businesses of those boycotted, and if it only had sufficient power it would give no quarter.

THE ANTI-CONSPIRACY BILL AND THE PICKET.

While the American Federation would destroy its enemies with the boycott if it could, that instrument has become so dulled from frequent use that to accomplish its ends it finds it must have recourse to other weapons, and among these is the picket. A cordon of the faithful, with good lungs, hard fists, and frequently a brickbat or two, is thrown around the factory of an obstreperous employer. Every workman and every man having business to transact at the factory must pass through the lines of this cordon. This is the "picket." It is the business of the "picket" to spy upon everything going on in the factory, to induce the men working to quit, and to influence the customers to transfer their patronage elsewhere. Ostensibly their methods are limited to those of mere persuasion; in practice, brickbats and the bludgeon play an important part. As a means of protection for both life and property the courts have frequently been invoked to issue injunctions against strikers, and, as injunctions are for the purpose of compelling

the maintenance of a peaceable *status quo* until disputes are settled, their use in regard to strikers is in accordance with correct principles of law and government. But the American Federation of Labor is determined to overthrow this power of the courts to enforce the preservation of orderly conduct between disputants. Its anti-conspiracy bill, for which it worked so persistently during the last session of Congress, seeks to legalize mob assemblages, enunciating the principle that any contract, agreement, &c., between two or more persons to do or not to do an act in furtherance of any trade dispute between employer and employees shall not be deemed criminal, or be made punishable as a conspiracy, if such act might lawfully be committed by an individual. The law further goes on to say that any such compact between two or more persons shall not be considered as in restraint of trade, nor shall any injunction be issued with relation thereto.

Every civilized government of the world has wisely held that large congregations of angry and discontented men constitute a menace to authority, and, therefore, governments have reserved the right to disperse these gatherings before actual violence takes place. But, under the terms of the anti-conspiracy act, the Government will be powerless to interfere with riotous gatherings until after crime has been committed. Such a proposed law is absolutely subversive of peaceable government, and its passage would be nothing more or less than a warrant to the lawless to institute a reign of terror.

ORGANIZATION OF EMPLOYERS.

In view of the gradual encroachment of unionism on individual and property rights, prudence and patriotism dictate the adoption of some decisive measures looking to the preservation of those fundamental principles of the social order to which we owe our present high progress and civilization. To my mind, the hope of accomplishing tangible results in this direction must be through organizations counter to those of labor.

The day of individual isolation is past. The time has gone when employers can stand alone. The manufacturers of Great Britain, after a bitter experience, have learned this lesson, and several years ago formed the Parliamentary Council of Great Britain, representing capital amounting to over £1,000,000,000. They are now beginning to reap the benefits which their council is able to accomplish, and organized labor has been administered several telling defeats in the last year. The employers of this country have yet time to head off many of the same evils which unionism has brought upon England, and I am firmly convinced that the way to do it is to form employers' associations in all the centers of industry and to unite them under one national employers' council.

The most obvious way in which employers' associations can accomplish good is to conduct a propaganda along the lines of truth and justice, and thus administer an antidote of common sense for the sophistry of the agitator which is now poisoning the minds of so large a mass of the people. The employers' association can stand for the right of its members to employ whom they please, for the right to hire as many apprentices as they deem necessary, and for the right to conduct their business untrammeled by the many petty exactions of unionism. It can also perform a great service by making it possible for thousands of men to shake off the shackles of unionism, which they now unwillingly bear, and they can furnish protection to the independent workman who holds dear the right to dispose of his labor as he sees fit.

CONCILIATION A MYTH.

To my mind this is not the proper time to talk conciliation. The term conciliation, as applied to the labor question, serves only to mystify the public mind and to produce a general misconception as to the nature of the problem confronting the nation. Conciliation implies a yielding attitude and a recognition of the validity of destructive demands made by the opposing side. Since the principles and demands of organized labor are absolutely untenable to those believing in the individualistic social order, an attitude of conciliation would mean an attitude of compromise with regard to fundamental convictions.

In my opinion, neither is it the time to talk arbitration or "joint agreements." To arbitrate questions of wages and hours is to introduce artificial methods of determining what they shall be, and, as we have seen, an equitable arrangement as to either cannot be effected artificially. Unless the natural law is allowed free play, injustice must be done as between classes of labor and classes of employers. Terms affected by arbitration involve the same erroneous principles as those upon which "joint agreements" are based. To arbitrarily fix the wages or number of hours of work in an industry is to charge the enhanced cost of production up to the consumer, and this, in turn, means a lessening of trade and production.

ARBITRATION IS A FAILURE.

It is conceivable that, to be compelled to arbitrate, many an employer would be driven out of business. Compulsory arbitration, according to reliable accounts, has proved a disastrous failure in New Zealand. It must prove a failure everywhere, and that because it is based on fallacious principles. And yet we find indications that it is coming in this country. In Chicago organized labor seems to be able to compel arbitration, and in the last few months a score or more of demands from labor have been arbitrated there, resulting in substantial increases of wages and lessening of hours all along the line. The anthracite strike also furnishes a significant example of arbitration forced upon employers. The general adoption of the kind of compulsory arbitration as illustrated in Chicago and in the mining industry, and, in fact, the adoption of any kind of arbitration policy, will be the entering wedge that will destroy industrial freedom. Once the principle is recognized that wages, &c., can be arbitrarily fixed by a court or a commission, and we will have taken up our march to socialism in earnest.

NECESSITY OF A NATIONAL EMPLOYERS' COUNCIL.

It has been suggested that the bars of the National Association of Manufacturers be let down, so as to admit all classes of employers into its membership, so that it may become the national organization of employers. But good judgment would seem to indicate that this would not be a proper step. The National Association of Manufacturers has a function peculiar to itself—that of directly protecting and fostering the manufacturing interests of the country. Aside from the stand it has taken on the labor question, there is nothing in its service of particular value to other classes of employers. It would seem to me, therefore, that a separate and distinct organization, enlisting under its banner employers of all classes, should be formed, and that its one purpose should be to look after the general interests of all employers.

ADMINISTRATION OF THE ASSOCIATION.

In regard to the various bureaus and several business departments of the association I am pleased to inform you that we have made unexampled progress. These matters are taken up in detail in the secretary's report, and I desire to call your attention specifically to the present character of the facilities which we have to offer to our membership.

A matter which has caused the officers of the association much thought is whether or not it would be advisable to adjust the membership dues so as to make it possible for all classes of manufacturers to come with us. The field men of the association have found that in many cases manufacturers would be willing to join the association were it not that they regarded the present dues as prohibitive. Hundreds of letters have been received from smaller manufacturers, suggesting that a graded membership fee be adopted, in order that they may contribute to the work of the association. There appears to be no doubt that, were it possible for small manufacturers to join on payment of annual dues of, say, $25, a large number of them could be secured. I do not wish to take the responsibility of making any specific suggestions as to the matter, but it appears to me it would be a good subject for consideration and discussion.

RECIPROCITY.

Nothing but failure appears to attend all efforts for reciprocity. Many treaties have been arranged, but few have passed muster in the Senate, and these few seem only to come into existence to be abrogated after a few years. The truth is that a real test has not yet been made of the reciprocity principle. Most of the treaties that have actually gone into effect have been with South American and other countries of low consuming capacity, countries with which no kind of trade arrangements could be expected to develop a very large commerce.

In weighing in our minds the validity of the reciprocity idea it is necessary to give due consideration to the relative value of our home market and foreign markets, and also to the benefits that have come to us from protecting our developing industries from ruinous foreign competition. The internal commerce of this country is equal to the entire international commerce of the world, and it follows that no other country can offer us a market in exchange for that of the United States that is anything like it in importance. In fact, it would likely be profitable for certain countries to give us the right of free admission of our goods in exchange for slight reductions in some of our tariff schedules, for it is conceivable that the increase of their exports to this country under such reductions of tariff duties might more than counterbalance the increase of our exports following the entire removal of their tariff restrictions. Our market of 80,000,000 of people of high individual consuming power is in every reciprocity proposal thrown into the scale against the market of some country of far less population and far less consuming capacity per individual. This fact shows how difficult it must be to arrive at an equitable arrangement, even though we approach the problem with the idea of advancing the greatest good for the greatest number. This idea, expressed in more definite terms, means that we could afford to sacrifice the trade of some minor industries in exchange for a trade of greater value than would be given for some of the larger industries. But this theory of negotiation would destroy the principle of protection under which our industries have reached such a high stage of development, for protection is not for those which are able to stand alone, but for those whose trade would be injuriously affected were it removed, and our association is committed to the idea that no reciprocity treaty should be indorsed which would work any injury to any industry.

On the other hand, the problem of devising means for the extension of our export trade is of the most pressing importance. If, as is claimed, the capacity of our mills and factories is one-third greater than is necessary to supply the home demand, it is obvious that the time is near at hand when we must obtain a broader foreign market, in order to keep the wheels of the factories moving. But, on the threshold of the problem, we are faced by the retaliatory measures adopted by foreign countries on account of the tariff barriers that prevent their entrance to our own market. The problem thus recurs to a consideration of the best method of obtaining trade concessions in exchange for concessions on our part. The question then arises: Is there any other way of obtaining these concessions besides that of reciprocity treaties, as now understood? These treaties, besides intrenching upon the protective principle, appear also to be open to other objections, one of which is that they are made by the executive branch of the Government, without the House of Representatives, where all revenue measures must originate, having any voice in their making. It would seem that tariff revision, which reciprocity amounts to, is a subject which the whole people should have ample opportunity to discuss and pass upon. Only in this way can the weaker industries be assured that full justice will be accorded their contentions. But it is a manifest impossibility for the House of Representatives to enter into any negotiations for tariff revision with any particular country. There is one thing it can do, however, and that is to formulate a general basis for reciprocity arrangements, which can be accepted or rejected by other countries as they see fit. I refer here to some plan analogous to that of France of having minimum and maximum tariff schedules. The minimum tariff would be a notification of the best terms we will grant, and the maximum tariff would be the basis which we should insist shall be used in considering any trade concessions. Between the two tariffs there should be ample margin for the exercise of elastic discretionary powers by the executive in negotiating with any other country. The plan has been found very advantageous by France, and it seems that if it were adopted by us it would tend toward softening the acrimony of tariff discussion at home and would also be the means of making advantageous foreign trade bargains.

THE ISTHMIAN CANAL.

The passage by Congress of the Isthmian Canal bill in June last assured the construction by the Government of the long needed ship canal across the Central American isthmus. The importance of this canal to the New World cannot be overestimated. It will place New York and other Atlantic seaports in closer connection than Europe with nearly the entire stretch of land on both sides of the Pacific Ocean. It will, in fact, be the key to the Orient, with its teeming millions, and cannot fail to give a great impetus to our manufacturing and commercial interests. It will also be of untold benefit to the Pacific slope, which at the present time is further removed from the markets of the world than any country with whose products it must compete.

PACIFIC CABLE

In harmony with the general policy of expansion upon which our country has embarked is the completion of the new Pacific cable. If the laying of this cable was a necessity on military and political grounds, owing to the acquisition of distant islands, it must also be, as time goes on, a business asset of ever increasing value. As a step forward toward the development of a market in the Orient it is secondary only to the construction of an Isthmian Canal, and comes as a natural sequence to the battle of Manila Bay, a battle which, perhaps, did more toward making this nation a great maritime and commercial power than many are yet ready to acknowledge.

SHIP SUBSIDIES.

With the development of our foreign commerce the question of the restoration of our merchant marine is one of great interest. The proposed policy of accomplishing this end by a system of ship subsidies does not seem to have behind it the same impulse which has been given it in recent years. Nevertheless, the subject is one which the most responsible trade body in the country should not pass over with indifference. The system of ship subsidies is either founded on correct principle or it is not, and, if the principle is correct, this association should endeavor to prove the fact to the world. Simply as a suggestion, I would like to say that perhaps it would be well to form a committee of our members who will study this question as it stands to-day and lay before the Executive Committee its conclusions, the latter to have power to act in accordance with the decision reached by the committee.

CONSULAR REFORM.

In reference to one other mooted question which relates directly to the extension of our export trade I also feel free to make a suggestion. I do not sympathize with those who condemn in unmeasured terms our present consular service. In many respects it is the best in the world, and that despite the "hit-or-miss" principle which characterizes the method of appointing the men composing it. Still, it would seem advisable to eliminate this "hit-or-miss" principle, as far as possible. We want business men in the consular service, investigators and reporters of facts—men with the enterprising American kind of mind—men capable of finding as many opportunities for us as possible and then letting us know about them. As possibly the best means of pushing forward a reform in the consular service, I urge upon the association an indorsement of the spirit of the Lodge and Adams bills.

COMMERCIAL EDUCATION.

The subject of commercial education has always been given an honored place in the discussions at our annual conventions, and it does not seem necessary to go into

detail in regard to it in this report. The association stands committed to the general proposition that some efforts should be made to secure the special training of young men for service in our foreign trade, it being recognized that the lack of men thoroughly conversant with the languages and customs of countries with which we seek to trade is a serious bar to commercial intercourse with them. Now that our foreign trade is becoming of greater importance each year, the question presses more upon us. As yet the way has not appeared open for attempting any practical plan of furthering the cause of commercial education as an association, but it is a pleasure to note the lively interest that is being taken in the subject by many of the colleges and universities of the country.

The subject of higher commercial education is closely related to that of trade, or technical, schools. Many of these schools have in recent years sprung into existence in this country, and employers in many lines and graduates of the schools alike testify to their value. But it is the general experience that the labor unions offer all the opposition within their power to these schools, this opposition being based upon a fear that the schools will become an effective means of breaking up the unions. The union restrictions as to apprentices must certainly be rendered ineffective, in good part, by these schools, and the unions will find it impossible to maintain a labor trust in any trade that has adequate school facilities for teaching it. In urging higher commercial education this association might well also, to my mind, urge the establishment of trade, or technical, schools.

THE POST CHECK SYSTEM.

One of the members of this association, C. W. Post of the Postum-Cereal Company, of Battle Creek, Mich., has succeeded during the past year in working up a very powerful sentiment in favor of a reform in the postal service which commends itself to every one who has studied it. This proposed reform is very appropriately called the post check currency system. Briefly described the post check system contemplates the retirement of the Treasury currency of small denominations and the substitution for it of post checks having the denominations of $1, $2 and $5, which post checks shall to all intents and purposes pass as other currency as long as they are not canceled. Whenever it is desired to make small remittances through the mails all that need be done is to write upon a check of the desired denomination the name of the payee, affix a 2-cent stamp to the bill, place it in an envelope and mail it. The payee, upon receiving the check, can exchange it at the postoffice or bank for a new check, whereupon the old check, no longer available for circulation, is canceled and sent to the Treasury Department by the bank or post office for final redemption. Viewed from every standpoint there seems to be no serious objection to the plan, while, on the other hand, it appears to offer many advantages over our present cumbrous money order system. I hope the association will see fit to give its indorsement to Mr. Post's admirable suggestion and offer him its assistance in the campaign he has inaugurated.

In connection with this subject the demand for other postal reforms, such as the parcel post and postal savings bank schemes, are worthy of attention. The great rural delivery reform is the only innovation of general value that has marked the Postal Department of the Government for ten years, and the possible ways in which that department could be made of increasing benefit to the people is an attractive subject. But, rather than undertake too much at one time, it would seem to be wise to limit our efforts to one reform in this line before giving extended consideration to any others.

AMENDMENT TO THE CONSTITUTION.

During the past year of activity the president of the association has felt keenly the need of an advisory council, which could be summoned together at a minimum cost to the association. The large Executive Committee is cumbersome and cannot be gotten together readily. It is composed of 18 members, one from each of the 12 States having the largest membership and six members at large. To secure a full meeting of this committee would entail an expense of from $1000 to $3000 upon the treasury of the association. I suggest that this convention authorize the appointment of a president's advisory council, which shall consist of not over six members, inclusive of the treasurer, and of which the president shall be chairman. I have no suggestion to make as to how the other five members of this advisory council shall be appointed. In my opinion this advisory council should have regular calendar days for meeting, and the committee should get together at least four times a year. The president should also be authorized with power to call the council together, when, in his judgment, such action is necessary.

The Proposed Shoe Machinery Shops for Beverly, Mass.

The United Shoe Machinery Company of Boston have invited bids for the great shops which will be erected at Beverly, Mass. Sealed bids will be received by F. M. Andrews, of Dayton, Ohio, the architect of the buildings, at the Boston office of the company no later than May 7. It has been a matter of much speculation among machine tool builders and dealers as to whether the shops would be built this year. In fact the subject has been of unusual interest because it is known that the company will be very large buyers of tools. It seems to be safe to say that the building will be completed this season. Contractors in various cities have been asked if they wish to submit bids, and they understand from the communications sent them that the work will be done this year. In fact they say there can be no doubt on the subject. Each contractor has received a block plan showing the location and size of the buildings, but not, however, designating whether they will be more than one story in hight; neither do they give the purposes to which the various buildings will be devoted.

The plant will be on the Boston & Maine Railroad. The main group of buildings consists of three long structures, parallel to the railroad and to one another, and set one back of the other. Each is 510 feet 10 inches in length, and 61 feet 10 inches in depth. They are 80 feet apart, and each building is connected with that adjacent by two broad structures varying from 80 to 120 feet from either end of each building. The connections will serve as passage ways between the buildings, but are wide enough to be useful for shop purposes also. The rearmost of the three is really three buildings, according to the plans, for while adjoining they are divided into three sections in the measurements.

At the rear of this group are several large buildings, one 210 x 178 feet 10 inches; another 120 feet square; a third 132 x 62 feet, and another 76 x 48 feet. The letter to the contractors, which is preliminary to sending out detailed plans, states that 10 or 12 buildings will be included, which is a greater number than shown in the ground plan received. The buildings will be of modern steel and masonry construction.

The United Shoe Machinery Company have had this new plant under consideration for several years. When it is completed the company's shops at Winchester and Hyde Park, Mass., will be abandoned, the need of larger and better equipped shops having become imperative.

A correspondent of an English technical paper says that the trouble of removing broken stud bolts is so great (in England, doubtless) that one firm throws away large castings when an accident of this sort occurs to them rather than "fuss" with them. "Fuss" is a good word in this connection, for it well describes the procedure with many concerns. Breaking stud bolts is a common mishap, generally considered in the light of a calamity, but it is of no moment whatever. A steel set screw broken off below the surface in a pulley might be called so, especially when it is hardened, but even this can be dealt with successfully. If a hole a little smaller in diameter than the bottom of the thread is drilled in a broken stud bolt, the whole length of it, the stud can be readily removed with a square reamer.

The United States Steel Corporation.

The complete pamphlet report of the United States Steel Corporation has now been issued. Many of the most important tables have already been published. Others we reproduce herewith:

Undivided Surplus of United States Steel Corporation and Subsidiary Companies.

(Since organization of U. S. Steel Corporation, April 1, 1901.)

Surplus or working capital provided in organization		$25,000,000.00
The surplus arising from operations for the nine months ended December 31, 1901, as reported was	$19,828,827.14	
Add profits during this period of properties owned but not heretofore included	375,627.86	
	$20,204,455.00	
Less written off in 1902 to cost of property and for adjustment of sundry contracts and accounts	1,583,514.70	
		18,620,940.30
Surplus for the year 1902, as above		34,253,656.75
Total surplus, December 31, 1902		$77,874,597.05

The balances to the credit of the several funds on December 31, 1902, per the preceding table, are included in the current assets of the organization—viz.:

In general cash	$1,773,333.33
In current assets—Cash, marketable securities, inventories, &c.	18,491,145.85
Total	$20,264,479.18

Inventories.

The aggregate inventories of all properties on December 31, 1902, equaled the total sum of $104,390,844. About one-third of this sum is represented by the value of iron ore on hand. It is necessary to accumulate large tonnages of ore during the summer and fall months for conversion during the period extending from December 1 to April 15, when, owing to the close of navigation on the Great Lakes, the mining of ore is reduced and shipment from the mines entirely stopped.

The quantities of partly finished materials (blooms, billets, bars, &c.), also of finished products, are somewhat above the normal average, owing largely to the railroad congestion at principal producing centers, which prevented prompt deliveries from the mills.

Inventories are taken on basis of actual cost of the materials and products at the several departments of the companies holding the same.

The following is a general classification of the inventories on December 31:

Ores	$34,072,939
Pig iron, scrap, spiegel and ferro	6,294,358
Coal and coke	858,820
Pig tin, lead and spelter	1,362,466
Limestone, fluxes and refractories	969,203
Rolls and molds and stools	2,359,505
Manufacturing supplies, stores and miscellaneous items not otherwise classified	10,299,989
Ingots, blooms, billets, sheet and tin plate bars, skelp, rods, &c.	12,824,909
Finished products	18,968,396
Mining supplies and stores	1,866,125
Railroad supplies and stores	1,165,374
Material, labor and expense locked up in bridge and structural contracts, including estimated profit thereon $27,443,409	
Less bill rendered on account 17,447,810	9,995,599
Material in transit and on consignment	3,353,461
Total	$104,390,844

Bonded, Debenture and Mortgage Debt.

At the beginning of the year the bonded and mortgage debt of the United States Steel Corporation and subsidiary companies in the hands of the public was $366,097,697.82

Net Profits and Surplus of United States Steel Corporation and Subsidiary Companies at Close of Each of the Quarters Named.

(Includes only surplus received or earned on or subsequent to April 1, 1901.)

Quarter ending—	Net profits for quarter available for dividends.	Surplus at close of quarter before declaration of dividends.*	Dividends on U. S. Steel Corporation stock for respective quarters.	Balance of surplus.
June 30, 1901	$19,907,277.28	$44,907,277.28	$13,957,028.25	$30,950,249.03
September 30, 1901	20,063,626.25	51,013,875.28	14,010,277.75	37,003,597.53
December 31, 1901	20,629,205.52	57,632,803.05	14,011,862.75	43,620,940.30
March 31, 1902	16,700,221.26	60,321,161.56	14,013,434.25	46,307,727.31
June 30, 1902	26,742,277.86	73,050,005.17	14,013,542.75	59,036,462.42
September 30, 1902	25,849,817.58	84,886,280.00	14,012,946.25	70,873,333.75
December 31, 1902	21,014,207.55	91,887,541.30	14,012,944.25	77,874,597.05

* Includes capital surplus of $25,000,000, provided at date of organization.

NOTE.—Special depreciation and improvement fund of $10,000,000, set aside from 1902 net earnings, is distributed in above table, $2,500,000 to each quarter of 1902.

Sinking, Depreciation and Extraordinary Replacement Funds.

Provisional charges are made monthly to operations for bond sinking funds and to establish funds for depreciation and for reserves for extraordinary replacements. The purposes for which these funds are particularly designed are as follows:

BOND SINKING FUNDS.—These are the funds required by the respective mortgages to be set aside annually for retirement of the bonds issued thereunder.

DEPRECIATION AND EXTINGUISHMENT FUNDS.—The appropriations for these purposes have been made with the idea that thus aided the bond sinking funds will liquidate the capital investment in the properties at the expiration of their life. These moneys are used not for current operating expenses, but to offset consumption and depreciation by the provision of new property or of reserve funds.

EXTRAORDINARY REPLACEMENT FUNDS.—These are designed to be used to improve, modernize and strengthen the properties. They are not used for ordinary maintenance, repairs and renewals (such expenses are included in current operating costs), but for the substitution of improved and modern machinery, plants, facilities, equipment, &c.

During the year ended December 31, 1902, the appropriations made for the foregoing funds, together with the payments therefrom, and the balances in the funds at the close of the year, were as follows:

Funds.	Credits to funds. Balance December 31, 1901.	Credits to funds. Set aside from earnings during 1902.	Credits to funds. Total.	Payments from and charges to funds. Payments to trustees of sinking funds.	Payments from and charges to funds. Other payments and charges.	Balances to credit of funds December 31, 1902.
Sinking fund on United States Steel Corporation bonds	$1,773,333.33	$3,040,000.00	$4,813,333.33	$3,040,000.00	.....	$1,773,333.33
Sinking funds on bonds of subsidiary companies	157,344.36	624,064.43	781,408.79	564,064.43	.....	217,344.36
Total bond sinking funds	$1,930,677.69	$3,664,064.43	$5,594,742.12	$3,604,064.43	.....	$1,990,677.69
Depreciation and extinguishment	8,884,756.84	4,834,710.28	13,719,467.12	.....	$12,011,856.53a	1,707,610.59
Extraordinary replacement	5,052,388.74	9,315,614.76	14,368,003.50	.....	7,801,812.60b	6,566,190.90
Special depreciation and improvement	.....	10,000,000.00	10,000,000.00	.....	.....	10,000,000.00
Totals	$15,867,823.27	$27,814,389.47	$43,682,212.74	$3,604,064.43	$19,813,669.13	$20,264,479.18

a Construction expenditures charged off to depreciation and extinguishment funds.

b Expended for extraordinary replacements $7,926,792.60
Less miscellaneous receipts credited to extraordinary replacement fund 124,930.00
Net $7,801,862.60

Issues were made during the year by the several companies as follows—viz.:

Bessemer & Lake Erie R. R. Company, Erie equipment trust bonds	$1,220,000.00	
Pittsburgh, Bessemer & Lake Erie R. R. Company debenture gold bonds, total issue $500,000 (Carnegie Company proportion)	260,895.00	
Elgin, Joliet & Eastern Ry. Company first mortgage bonds	648,000.00	
Duluth, Missabe & Northern Ry. Company consolidated second mortgage bonds	75,000.00	
Sundry real estate mortgages assumed by coke companies	166,443.35	
		2,370,338.35
Total		$368,468,036.17

Less, retired or acquired during the year—viz.:

The Johnson Company (of Pennsylvania) first mortgage bonds	$95,000.00	
National Steel Company's issues:		
Ohio Steel Company, first mortgage bonds	80,000.00	
Junction Iron & Steel Company, mortgage bonds	35,000.00	
Shenango Valley Steel Company, mortgage bonds	150,000.00	
Raney & Berger Iron Company, mortgage bonds	80,000.00	
American Tin Plate Company issues:		
U. S. Iron & Tin Plate Mfg. Company, mortgage bonds	$55,000.00	
American Bridge Company, purchase money mortgage bonds	100,000.00	
South-West Connellsville Coke Company, mortgage bonds	36,000.00	
Continental Coke Company, purchase money bonds	37,000.00	
H. C. Frick Coke Company, first mortgage bonds	91,000.00	
H. C. Frick Coke Company, purchase money mortgage bonds	150,000.00	
Hostetter-Connellsville Coke Company, purchase money mortgage bonds (H. C. Frick Coke Company proportion)	12,500.00	
Pittsburgh, Bessemer & Lake Erie R. R. Company bonds (Carnegie Company proportion):		
Car Trust warrants	$17,639.40	
Conneaut equipment trust	26,089.50	
Bessemer equipment trust	39,134.25	
Illinois Steel Company debenture scrip	1,418.55	
Sundry real estate mortgages of various companies	691,795.63	
Total bonds and mortgages paid and canceled	$1,697,577.33	
Bonds purchased by trustees of sinking funds for investment therein—viz.:		
U. S. Steel Corporation 50-year gold bonds	$2,698,000.00	
Duluth, Missabe & Northern Ry. con. first mortgage	83,000.00	
Duluth, Missabe & Northern Ry. con. second mortgage	151,000.00	
American Steamship Company, first mortgage	183,000.00	
	3,115,000.00	
		4,812,577.33
Bonded, debenture and mortgage debt in hands of public, December 31, 1902		$363,655,458.84
Net decrease during the year		$2,442,238.98

In addition to the foregoing transactions in bonds there were surrendered for exchange $207,000 of the Carnegie Company collateral trust bonds, and in lieu of which an equal amount of United States Steel Corporation 5 per cent. 50-year gold bonds was issued.

The amount of bonds and mortgages retired, $4,812,577.33, was paid from sinking and depreciation fund provisions and surplus earnings. Since the organization of the United States Steel Corporation, April 1, 1901, to January 1, 1903, the amount of bonds and mortgages paid and retired by all properties, including bonds purchased for sinking funds, was $6,384,758.75. There were issued during this same period bonds and mortgages for new property acquired to the amount of $3,456,659.76, a net decrease of $2,928,098.99.

Purchase Money Obligations, Bills Payable and Special Deposits.

The unsecured liabilities of the subsidiary companies of the above character were reduced during the fiscal year of 1902, and also during the period from April 1, 1901 (date of organization of U. S. Steel Corporation), to December 31, 1902, by the following respective amounts—viz.:

	Paid off between April 1, 1901, and December 31, 1901.	Paid off during year of 1902.	Total reduction April 1, 1901, to December 31, 1902.
Purchase money obligations and bills payable	$8,678,836.01	$12,884,558.85	$21,563,394.86
Special deposits	2,369,134.56	767,809.09	3,136,943.65
Totals	$11,047,970.57	$13,652,367.94	$24,700,338.51

The funds for the payment of the above liabilities were provided entirely from the surplus net earnings of the organization—no new capital or bonded or other liability has been created in lieu thereof, although practically all of such payments might properly be funded, as the liabilities were those of the subsidiary companies prior to or at the time of organization of United States Steel Corporation for the acquirement of additional property or for moneys borrowed, which were in turn used for purchase of property and construction expenditures.

As shown by the general balance sheet, the amount of these liabilities outstanding on December 31, 1902, is as follows:

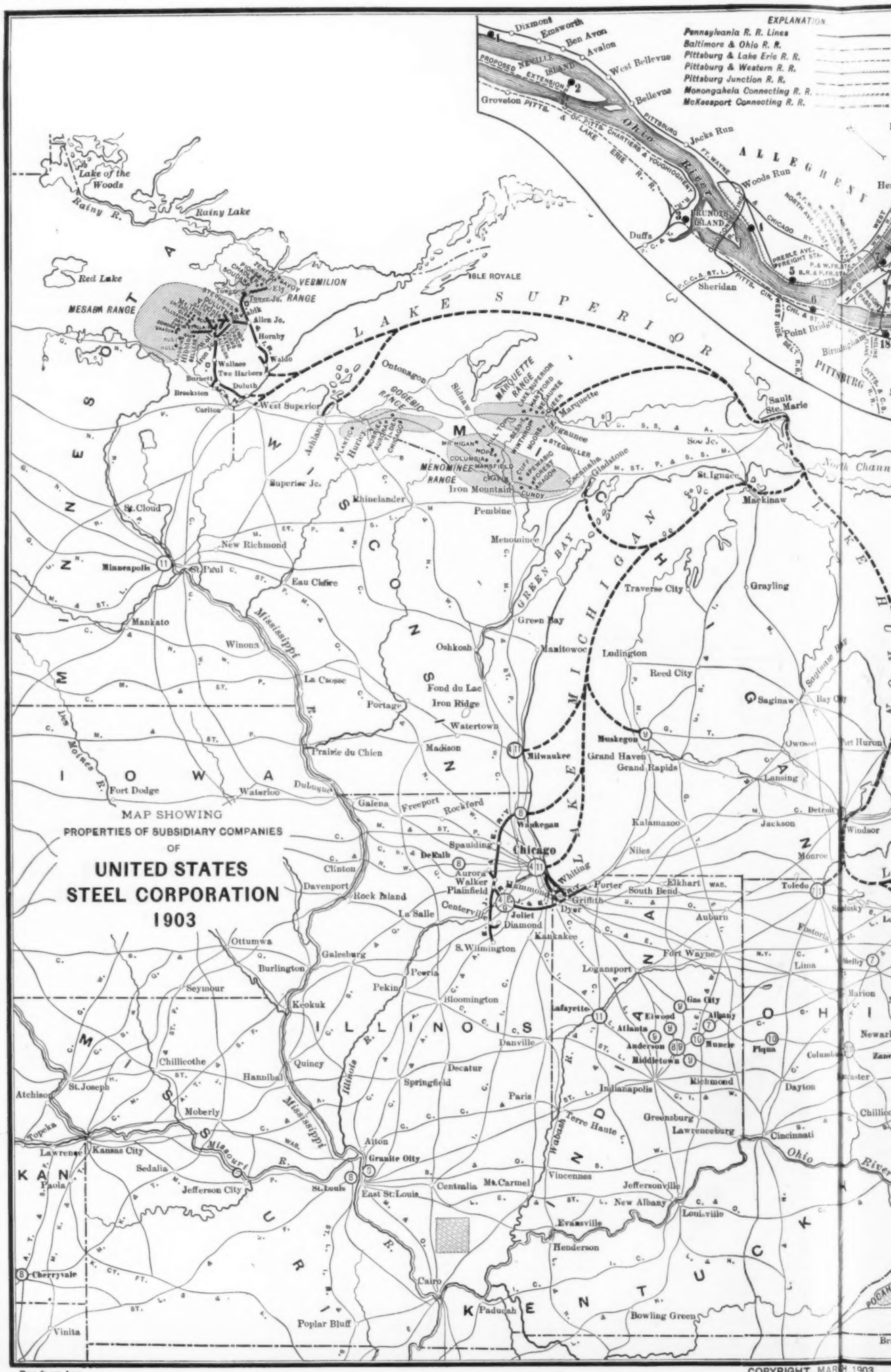
Purchase money obligations	$6,689,418.53
Bills payable	6,202,502.44
Special deposits	4,485,546.58
Total	$17,377,467.55

The property account statement was published in *The Iron Age* of April 9. The total expenditures for manufacturing purposes were there shown to be $9,743,125.78; for ore properties, $1,971,542.08; for coal and coke properties, $2,043,168.61, and for transportation properties $2,741,652.51.

Some of the principal additions to the properties of the subsidiary companies, on account of which the above expenditures were made during the year, are as follows:

Manufacturing Properties.

	Expenditures in 1902.
CARNEGIE STEEL COMPANY:	
Two new blast furnaces, Edgar Thomson works	$793,041
Fourteen inch billet and 10 and 13 inch bar mills, Duquesne works	186,489
Two new open hearth furnaces, Duquesne works	249,794
Additional blowing engines, Duquesne works	84,035
Extension armor plate plant, Homestead works	1,192,485
Two new open hearth furnaces, Homestead works	162,371
One new blast furnace, Carrie plant	375,158
ILLINOIS STEEL COMPANY:	
Two new blast furnaces and ore unloading equipment, South works	245,818
Addition to cement plant, South works	70,843
Ingot heating furnace, slab mill, South works	79,999
AMERICAN STEEL & WIRE COMPANY:	
Oxide plant, Worcester	87,062
Rail bond drop forging plant, Worcester	60,518
Extension of three-track steel trestle, Central furnaces	87,223
New mixer and blooming mill, Newburgh works	120,604
New tinning department, Newburgh works	29,041
New copperas plant, Rockdale works	22,432
Real estate, new works, equipment and warehouse, Pacific works, San Francisco	242,687
NATIONAL TUBE COMPANY:	
New blast furnace, Riverside department	414,542
Real estate, McKeesport	90,288
NATIONAL STEEL COMPANY:	
Eighteen-inch continuous mill, Mingo works	210,277
New shear building, Mingo works	22,971
Enlargement blooming mill, Mingo works	22,293
New blast furnaces and condenser plant, Mingo works	53,887
Addition to converting works, New Castle works	145,835
Additional blowing engines, furnaces, New Castle works	64,839
Additional real estate, Ohio works	21,000
AMERICAN STEEL HOOP COMPANY:	
Enlargement and improvement of blast furnaces, Isabella furnaces	915,286
Sixteen-inch mill and equipment, McCutcheon mills	39,688
AMERICAN TIN PLATE COMPANY:	
Eight additional tin mills, extension to specialty tin house, additional warehouse and other additions at Laughlin works	54,783
Construction of new works and sundry additions at Chester works	67,177
Twelve additional tin mills at Monessen works	518,099
Continuous mill and sundry additions at Monongahela works	155,041
AMERICAN SHEET STEEL COMPANY:	
New jobbing mill, Aetna works	53,179
Sixteen annealing furnaces, Aetna works	55,506
Extension to boiler plant, machine and roll shop, Aetna works	28,064
Eight new sheet mills, Vandergrift works	131,827
Two new open hearth furnaces, Vandergrift works	81,157
Extension of natural gas line, Vandergrift works	130,714
Five annealing furnaces, Dover works	33,348
Electrical equipment, Houk mine, Dover works	13,905
Additions to plant, Wellsville works	193,008
Two jump mills and other additions at Scottdale works	36,921
Four annealing furnaces, Struthers works	43,854



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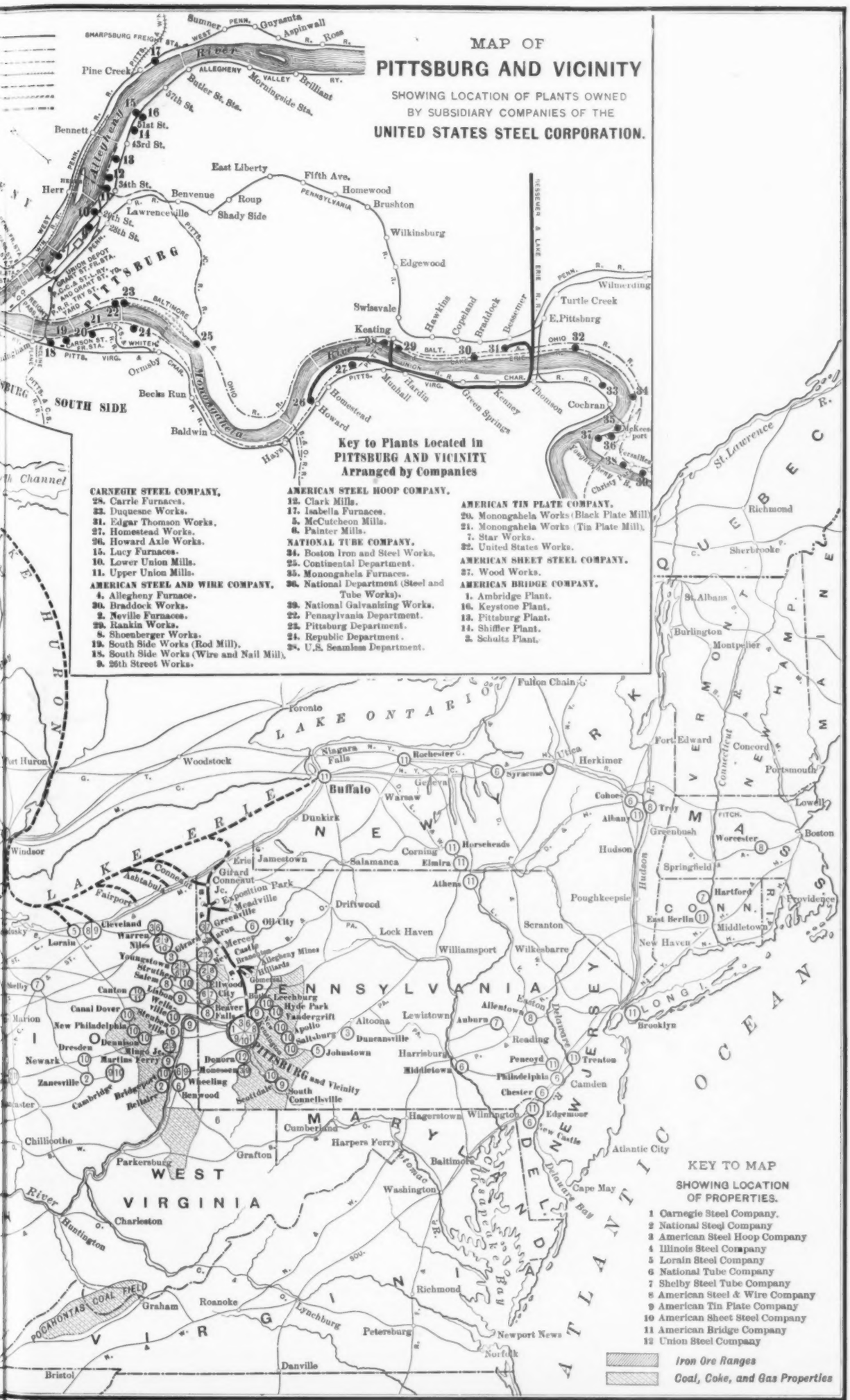
MAP OF
PITTSBURG AND VICINITY
SHOWING LOCATION OF PLANTS OWNED
BY SUBSIDIARY COMPANIES OF THE
UNITED STATES STEEL CORPORATION.
Key to Plants Located in
PITTSBURG AND VICINITY
Arranged by Companies
CARNEGIE STEEL COMPANY.
28. Carrie Furnaces.
33. Duquesne Works.
31. Edgar Thomson Works.
27. Homestead Works.
26. Howard Axle Works.
15. Lucy Furnaces.
10. Lower Union Mills.
11. Upper Union Mills.
AMERICAN STEEL AND WIRE COMPANY.
4. Allegheny Furnace.
30. Braddock Works.
2. Neville Furnaces.
29. Rankin Works.
8. Shoenberger Works.
19. South Side Works (Rod Mill).
18. South Side Works (Wire and Nail Mill).
9. 26th Street Works.
AMERICAN STEEL HOOP COMPANY.
12. Clark Mills.
17. Isabella Furnaces.
5. McCutcheon Mills.
6. Painter Mills.
NATIONAL TUBE COMPANY.
34. Boston Iron and Steel Works.
25. Continental Department.
35. Monongahela Furnaces.
36. National Department (Steel and Tube Works).
39. National Galvanizing Works.
22. Pennsylvania Department.
23. Pittsburg Department.
24. Republic Department.
38. U.S. Seamless Department.
AMERICAN TIN PLATE COMPANY.
20. Monongahela Works (Black Plate Mill).
21. Monongahela Works (Tin Plate Mill).
7. Star Works.
32. United States Works.
AMERICAN SHEET STEEL COMPANY.
37. Wood Works.
AMERICAN BRIDGE COMPANY.
1. Ambridge Plant.
16. Keystone Plant.
13. Pittsburg Plant.
14. Shiffler Plant.
3. Schultz Plant.
KEY TO MAP
SHOWING LOCATION
OF PROPERTIES.
1 Carnegie Steel Company.
2 National Steel Company
3 American Steel Hoop Company
4 Illinois Steel Company
5 Lorain Steel Company
6 National Tube Company
7 Shelby Steel Tube Company
8 American Steel & Wire Company
9 American Tin Plate Company
10 American Sheet Steel Company
11 American Bridge Company
12 Union Steel Company
Iron Ore Ranges
Coal, Coke, and Gas Properties
PITTSBURG and Vicinity
SOUTH SIDE
Allegheny River
Monongahela River
Ohio River
Pine Creek
Bennett
Herr
East Liberty
Fifth Ave.
Homewood
Brushton
Wilkinsburg
Edgewood
Swissvale
Keating
Hawkins
Copeland
Braddock
Bessemer
Wilmerding
Turtle Creek
E. Pittsburg
Cochran
McKeesport
Versailles
Benvenue
Roup
Shady Side
Lawrenceville
Becks Run
Baldwin
Hays
Homestead
Howard
Munhall
Hardin
Green Springs
Kenney
Thomson
Ornsby
Sharpsburg
Sumner
Guyasuta
Aspinwall
Ross
Butler St. Sta.
Morningside Sta.
Brilliant
57th St.
51st St.
43rd St.
34th St.
29th St.
28th St.
Union Depot
Smithfield St. Sta.
Grant St. Sta.
Liberty Ave. Sta.
Penn. Ave. Sta.
Wood St. Sta.
Carson St. Sta.
Fer. Sta.
Baltimore
Pittsburg
Virginia
Cleveland
Toledo
Detroit
Buffalo
Niagara Falls
Rochester
Syracuse
Utica
Herkimer
Albany
Troy
Boston
Providence
Hartford
New Haven
Middletown
East Berlin
Springfield
Worcester
Fitchburg
Lowell
Concord
Portsmouth
Fort Edward
Hudson
Poughkeepsie
Fulton Chain
Toronto
Woodstock
Port Huron
Windsor
Chicago
Milwaukee
Erie
Jamestown
Salamanca
Elmira
Corning
Horseheads
Dunkirk
Warsaw
Geneva
Canandaigua
Rochester
Ashtabula
Conneaut
Girard
Fairport
Meadville
Greenville
Oil City
Titusville
Driftwood
Lock Haven
Williamsport
Scranton
Wilkesbarre
Athens
Lorain
Sandusky
Youngstown
Warren
Niles
Girard
Sharon
Mercer
Castle Shannon
Allegheny Mines
Millvale
Homestead
Canton
Salem
Alliance
Wellsville
Steubenville
Canal Dover
New Philadelphia
Dennison
Dresden
Newark
Martins Ferry
Zanesville
Cambridge
Bridgeport
Bellaire
Monessen
Donora
Wheeling
Benwood
Beaver Falls
Hyde Park
Vandergrift
Leechburg
Apollo
Saltsburg
Johnstown
Duncansville
Altoona
Lewistown
Harrisburg
Middletown
Reading
Pencoyd
Philadelphia
Trenton
Camden
Chester
Auburn
Allentown
Easton
Delaware River
Brooklyn
Long I.
Atlantic Ocean
Atlantic City
Cape May
Delaware Bay
Chesapeake Bay
Baltimore
Washington
Hagerstown
Wilmington
Edgemoor
New Castle
Cumberland
Harpers Ferry
Grafton
Parkersburg
Chillicothe
West Virginia
Charleston
Huntington
Pocahontas Coal Field
Graham
Roanoke
Lynchburg
Richmond
Petersburg
Newport News
Norfolk
Danville
Bristol
Virginia
Maryland
Delaware
New Jersey
New York
Pennsylvania
Ohio
Indiana
Illinois
Michigan
Wisconsin
Quebec
Vermont
New Hampshire
Connecticut
Massachusetts
Rhode Island
St. Albans
Burlington
Montpelier
Sherbrooke
Richmond
St. Lawrence R.
Lake Ontario
Lake Erie
Lake Huron
Lake Michigan
Lake Superior

Two cold mills, Struthers works	11,625
New 30-ton electric crane, Struthers works	25,332
Additions to sheet mill and two additional boilers, Struthers works	34,601
Two new sheet mills, Wood works	41,986
Extension to buildings, Wood works	28,431
AMERICAN BRIDGE COMPANY:	
New plant at Economy, Pa., Ambridge plant	683,494
Additions to the Trenton plant	154,861
Additions to the Toledo plant	43,970
Additions to the Brooklyn plant	110,864
New machine shop and accessory buildings and machinery, Pencoyd plant	158,710

Ore Properties.

Additional fee properties, leases, &c., acquired	$985,322
Purchase of additional real estate, and timber lands, to provide mining timber	565,659
For construction at Savoy and Sibley mines of two new steel shaft houses, new engine, power and hoisting plant, compressors, equipment, &c	162,119
Additional equipment and additions to the mining plants at Fayal, Stephens and Adams mines	145,813
General additions to mining plants and equipment at various mines of a total expenditure, less credits for property sold and transferred, to amount to	112,629

Coal and Coke Properties.

	Expenditures in 1902.
Additional coking and steam coal lands	$258,480
Development of new coking coal properties in the Connellsville and Lower Connellsville districts, viz.:	
Development and opening of mines $498,854	
Coke ovens 284,596	
Mine and oven equipment 146,704	
Dwellings 101,473	
	1,031,627
Development of coking coal property in the Pocahontas district in West Virginia	585,885
This is the property referred to in the preliminary report to stockholders, submitted at the annual meeting, February 17, 1902. Fifty thousand acres of coking coal are held under lease on a royalty basis, and on terms favorable for production and transportation.	
Development of steam coal property in Washington and Allegheny counties, Pa	198,058

Transportation Properties.

Additional equipment.—Sixteen locomotives, 1050 steel gondola and hopper cars, 400 steel coal cars, 150 box cars, 8 caboose and 5 passenger cars	$1,763,158
Union Railroad.—Construction retaining wall along Monongahela River	151,202
Bessemer & Lake Erie Railroad:	
New line, Kremis to Osgood	196,367
New shops and office building at Greenville	72,472
New hotel, Exposition Park	25,575
General construction by all railroads, including additional right of way, buildings, mine and logging spurs, sidings, &c	532,878

Miscellaneous Properties.

Carnegie Natural Gas Company.—New gas lines and pumping station	$293,698
Carnegie Land Company.—Credit for property sold, less cost of additional land and improvements acquired *Credit*	582,155
Additional property, real estate and improvements acquired by sundry water and supply companies	117,027

Property Account Expenditures Since Organization United States Steel Corporation.

The total amount of expenditures for property account by all properties, from April 1, 1901, to December 31, 1902, was as follows:	
During the nine months ending December 31, 1901	$16,956,868.63
During the fiscal year ending December 31, 1902, as hereinbefore shown	16,586,531.77
Total	$33,543,400.40
On account of the expenditures as above, funds have been provided by issue of bonds and mortgages by the subsidiary companies (chiefly securities of railroads) to amount of	3,456,659.76
Balance of outlays for property account from April 1, 1901, to December 31, 1902, paid in cash from depreciation accounts and surplus earnings	$30,086,740.64

Summary of Cash Payments for property Account and Reduction of Purchase Money Obligations, Bills Payable, Bonds, Mortgages, &c., Since Organization of the United States Steel Corporation.

Amount paid in cash from depreciation accounts and surplus earnings, for property account from April 1, 1901, to December 31, 1902, per preceding page	$30,086,740.64
Paid from surplus during the above period to reduce purchase money obligations, bills payable and special deposits of subsidiary companies, as heretofore shown	24,700,338.51
Amount of bonds and mortgages discharged during the same period (exclusive of bonds redeemed with sinking fund moneys) and paid out of surplus earnings	3,091,758.75
Making a grand total paid in cash from April 1, 1901, to December 31, 1902, from depreciation accounts and surplus, for property account and reduction of various liabilities outstanding at time corporation were organized	$57,878,837.90

Union-Sharon Purchase.

In December, 1902, the corporation acquired the entire issue of capital stock of the Union Steel Company, which latter company had absorbed the Sharon Steel Company and had acquired the entire issues of capital stock of the Sharon Ore Company, the Sharon Coke Company, the Sharon Sheet Steel Company, the Donora Mining Company, the Republic Coke Company, the River Coal Company, and a controlling interest in the capital stock of the Sharon Tin Plate Company and the Sharon Coal & Limestone Company. Such acquisition was effected by direct negotiation with the owners, on the basis of actual cost of the properties to the vendors, except as to certain ore and coal property and other lands, and as to them on a basis not exceeding actual present value.

In consideration of the transfer of the Union Steel Company's stock the Steel Corporation guaranteed the principal and interest of the Union Steel Company's 50-year first mortgage and collateral trust 5 per cent. gold bonds issued and to be issued to the aggregate principal sum of $45,000,000. The amount of these bonds which were outstanding at the time the stock was formally turned over to the Steel Corporation was $29,114,000

The balance of the issue of the above bonds is reserved for the following purposes:

Sold for cash at par to be taken in monthly installments during 1903 by the vendors of Union Steel Company stock, in accordance with agreement with them	8,512,000
The cash received from the sale of these bonds is to be used for completing furnaces, mills, additions and extensions to the property under way on December 1, 1902, and to provide working capital.	
Reserved to retire outstanding bonds of the Sharon Steel properties at their maturity	3,500,000
Reserved for future use for additions, construction and improvements	3,874,000
Total authorized issue	$45,000,000

The property acquired through the capital stock of the Union Steel Company, completed and under construction, is as follows:

Manufacturing plants at Donora and Sharon, Pa.—Five blast furnaces, 24 open hearth furnaces, 2 blooming, slabbing and sheet bar mills, 4 rod mills, 2 wire and nail mills, 1 skelp works, 1 tube works, 1 plate mill, 1 tin plate plant, 1 sheet plant, by-product coke plant, 212 ovens.

Coking coal property in Lower Connellsville district, 4740 acres of coal and 810 acres of surface.

Steam coal property on Monongahela River, 1524 acres of coal and 179 acres of surface.

The Sharon and Penobscot mines (in fee) and Donora and Sweney mines (leases) on the Mesaba range, containing approximately 40,000,000 tons of iron ore.

Two modern steel ore steamers.

The negotiations preliminary to the transfer of the above properties were completed and the properties formally turned over to this organization after January 1, 1903. Therefore the earnings of such properties for December, 1902, and the assets, liabilities and bonded debt thereof at the close of the year are not included in the statements and balance sheet embraced in this report.

It is believed the earnings of the above properties will be sufficient to provide at least the interest on the bonds and a sinking fund which will eventually pay and retire the bonds.

Purchase of Troy Steel Products Company.

The American Steel & Wire Company acquired as of January 1, 1903, the entire issues of capital stock and first mortgage bonds of the Troy Steel Products Company, at the price of $1,100,000.

The property owned by above company is situated on Breaker Island, in the Hudson River, at Troy, N. Y., together with property and accessory works on the east side of the river. The property consists of three blast furnaces, steel works and rolling mill.

Organization.

In the preliminary report submitted to stockholders at the first annual meeting, February 17, 1902, reference was made to what had been accomplished to that time in bringing into harmonious co-operation the various companies and departments within the organization. During the year further advances have been made in this direction, and the beneficial results anticipated therefrom, as was indicated in the report above referred to, have been fully realized.

The policy and business of this corporation, and the companies in which they are interested, are to a large extent considered and determined by the regular committees, or their subcommittees, or special committees consisting of the presidents or

other officers of subsidiary companies, or some of them, thus deriving the benefit which necessarily results from deliberate and combined action of all.

Direct control and active management of the subsidiary companies are in charge of their respective officials. Each company have a complete organization, consisting of a president, vice-president, general manager, superintendents, &c. The presidents of the subsidiary companies are as follows:

W. E. Corey	Carnegie Steel Company, National Steel Company, American Steel Hoop Company.
James H. Reed	Bessemer & Lake Erie Railroad Company, Union Railroad Company.
Thomas Lynch	H. C. Frick Coke Company, and other coal and coke companies.
Thomas F. Cole	Minnesota Iron Company, Oliver Iron Mining Company, and other mining companies.
D. M. Clemson	Pittsburgh Steamship Company.
William P. Palmer	American Steel & Wire Company.
William B. Schiller	National Tube Company, Shelby Steel Tube Company.
W. T. Graham	American Tin Plate Company.
E. J. Buffington	Illinois Steel Company.
George G. McMurtry	American Sheet Steel Company.
Alfred J. Major	American Bridge Company.
Joshua A. Hatfield	American Bridge Company of New York.
Daniel Coolidge	Lorain Steel Company.
A. F. Banks	Elgin, Joliet & Eastern Railway Company, Chicago, Lake Shore & Eastern Railway Company.
F. E. House	Duluth & Iron Range Railroad Company.
W. J. Olcott	Duluth, Missabe & Northern Railway Company.

Each subsidiary company are fully equipped for success independently of any other company or corporation, but the association and connection with the officers of other companies in which this corporation are interested, and with the officers and committees of this corporation, results in great benefit to each subsidiary company, and to this corporation. It is believed the officials of subsidiary companies represent the very best talent that can be secured.

These presidents are in constant communication with each other, and with the officials and members of the committees of this corporation. The officers and committees of this corporation are also in daily communication with each other. The Executive Committee and Finance Committee of this corporation meet regularly each week, and frequently in special session, and sub-committees for special work are appointed from time to time.

As an illustration of the method of transacting business, suppose one of the subsidiary companies are desirous of making a substantial expenditure for improvements, or of entering into a contract of sale or purchase involving a large sum of money, or of making some important change in policy, the superintendent or manager who first suggests the proposed action will make recommendation to his superior officer, giving reasons in detail. This will reach the president of the particular company, and be considered by him and his committee. After decision the subject is submitted to the president or other officer of this corporation, and is brought before the Executive Committee of this corporation for consideration. As the presidents of the subsidiary companies meet monthly for consultation, many, if not most, important questions are also considered at these meetings, and recommendations then made for consideration by the officials and committees of this corporation. After the question has been considered by the Executive Committee of this corporation, if a question of money is involved (and frequently if a question of policy is involved) the subject is then considered by the Finance Committee.

The 250 mills of the American Tin Plate Company are located as follows:

Works and location.	Number.
Great Western, Joliet, Ill.	4
Champion, Muskegon, Mich.	6
American, Elwood, Ind.	26
Anderson, Anderson, Ind.	7
Morewood, Gas City, Ind.	8
Irondale, Middletown, Ind.	6
Cambridge, Cambridge, Ohio.	6
Crescent, Cleveland, Ohio.	6
Falson, Niles, Ohio.	6
Beaver, Lisbon, Ohio.	7
Laughlin, Martin's Ferry, Ohio.	23
La Belle, Wheeling, W. Va.	10
Chester, Chester, W. Va.	7
New Castle, New Castle, Pa.	20
Shenango, New Castle, Pa.	30
Elwood, Elwood City, Pa.	6
Star, Pittsburgh, Pa.	8
Monongahela, Pittsburgh, Pa.	14
United States, Demmler, Pa.	11
Pittsburgh, New Kensington, Pa.	7
Pennsylvania, New Kensington, Pa.	6
National, Monessen, Pa.	20
Humbert, South Connellsville Pa.	6
Total	250

The report presents the following interesting summary of the plants of the different subsidiary companies:

Summary of Manufacturing Plants.

Name of operating company.	Number of blast furnaces.	Bessemer steel works. Number of works.	Bessemer steel works. Number of converters.	Open hearth steel works. Number of works.	Open hearth steel works. Number of furnaces.	Blooming, slabbing, billet and sheet bar mills. Number of works.	Blooming, slabbing, billet and sheet bar mills. Number of mills in works.	Number of rail mills.	Plate mills. Number of works.	Plate mills. Number of mills in works.	Puddling mills. Number of works.	Puddling mills. Number of puddling furnaces.	Puddling mills. Number of muck rolls.	Skelp mills. Number of works.	Skelp mills. Number of mills in works.	Merchant, bar, hoop and cotton tie mills. Number of works.	Merchant, bar, hoop and cotton tie mills. Number of mills in works.	Structural shape mills. Number of works.	Structural shape mills. Number of mills in works.	Rod mills. Number of works.	Rod mills. Number of rod mills in works.	Wire mills. Departments for galvanizing.	Wire mills. Departments for tinning.	Sheet mills, black plate mills and tin plate mills. Number of works.	Sheet mills, black plate mills and tin plate mills. Number of hot mills in works.	Sheet mills, black plate mills and tin plate mills. Departments for tinning.	Sheet mills, black plate mills and tin plate mills. Departments for galvanizing.	Number of tube mills.	Number of bridge and structural plants.	Number of foundries.	Miscellaneous works.
Carnegie Steel Company	21	3	8	4	60	3	11	2	3	7	..	..	..	..	..	3	6	2	8	..	..	..	..	2	446	..	..	..	..	..	2	{1 axle works. 1 armor plant. 2 bolt and rivet departments.
National Steel Company	17	5	10	1	6	6	14	1	..	..	..	..	..	..	..	..	..	..	..	1	3	2	17	6	250	21	..	..	..	..	1	
American Steel Hoop Company	3	..	..	..	..	..	..	..	..	..	8	164	8	..	..	11	42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	{2 cement plants. 1 spike, bolt and nut factory.
Illinois Steel Company	19	2	5	1	10	2	6	2	1	2	..	..	..	5	19	2	8	..	..	1	2	..	..	..	164	..	7	5	..	1	2	
Lorain Steel Company	2	1	2	..	..	1	2	1	..	..	..	..	..	1	1	..	..	..	..	..	13	21	22	17	6	..	..	..	..	..	..	1 frog and switch works.
American Steel & Wire Company	12	3	6	3	15	4	6	..	1	3	..	..	..	..	..	3	8	..	..	..	21	22	17	6	23	250	..	..	..	..	5	2 zinc smelting works.
National Tube Company	5	2	4	..	..	2	2	..	..	..	4	121	5	5	22	..	..	..	..	..	..	..	..	..	2	2	..	..	16	..	4	{2 cut nail mills. 1 galvanizing works.
Shelby Steel Tube Company	..	..	..	..	..	..	..	..	..	..	..	..	..	5	19	..	..	..	..	..	..	..	..	..	..	164	..	..	7	..	..	
American Sheet Steel Company	..	..	..	2	10	9	12	..	..	..	1	19	1	1	1	..	..	..	..	..	..	..	..	..	20	164	..	5	..	..	1	
American Tin Plate Company	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	250	21	..	..	..	1	
American Bridge Company	..	..	..	1	11	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	26	5	..	1 axle works.
Union Steel Company	5	..	..	2	24	2	5	..	1	1	..	..	..	1	3	..	..	..	3	..	2	4	2	2	2	30	1	1	1	..	..	
Grand total	84	16	35	14	186	81	60	6	6	18	12	804	14	12	45	19	64	8	11	16	27	24	19	6	47	446	22	6	24	27	22	18 miscellaneous.

The 164 hot mills of the American Sheet Steel Company are distributed as follows:

Works and location.	Number.
Midland, Muncie, Ind.	7
Piqua, Piqua, Ohio	4
Dresden, Dresden, Ohio	4
Cambridge, Cambridge, Ohio	7
Dennison, Dennison, Ohio	4
New Philadelphia, New Philadelphia, Ohio	9
Dover, Canal Dover, Ohio	10
Canton, Canton, Ohio	5
Falson, Niles, Ohio	4
Struthers, Struthers, Ohio	6
Wellsville, Wellsville, Ohio	6
Ætna-Standard, Bridgeport, Ohio	23
Wood, McKeesport, Pa.	13
Scottdale, Scottdale, Pa.	8
Old Meadows, Scottdale, Pa.	6
Saltsburg, Saltsburg, Pa.	4
Apollo, Apollo, Pa.	6
Vandergrift, Vandergrift, Pa.	23
Hyde Park, Hyde Park, Pa.	5
Kirkpatrick, Leechburg, Pa.	10
Total	164

Iron Ore Mines—List of Active Iron Ore Mines Owned by Subsidiary Companies in the Lake Superior Ore District.

Marquette Range: Bessie, Hartford, Queen (three-quarters interest), Section 16 (three-quarters interest), Section 21 (three-quarters interest), Hard Ore (three-quarters interest), Hematite Ore (three-quarters interest), Moore, Negaunee, Stegmiller, Winthrop, Volunteer.

Menominee Range: Columbia, Forest, Hope, Mansfield, Michigan, Riverton, Cuff, Hilltop, Chapin, Aragon, Cundy, Iron Ridge, Pewabic (one-half interest).

Gogebic Range: Norrie, Aurora, Chicago, Tilden, Atlantic.

Vermillion Range: Pioneer, Savoy, Sibley, Zenith, Chandler (one-half interest), Soudan.

Mesaba Range: Mountain Iron, Stephens, Virginia, Fayal, Auburn, Genoa, Chisholm, Sauntry, Clark, Adams, Burt, Day, Duluth, Glen, Hull, Pillsbury, Rust, St. Clair, Sellers, Spruce, Donora, Sharon, Penobscot, Sweeney, Union (one-half interest), Biwabik (one-quarter interest), Mahoning (one-fifth interest).

In addition to the foregoing active mines, the subsidiary companies own on the ranges named extensive acreages of land, much of which contains large quantities of ore yet unopened, and on which there are also great quantities of standing timber designed for future use in mining operations.

Coking Coal Properties Owned by Subsidiary Companies.

In the Connellsville and Lower Connellsville districts in Westmoreland and Fayette counties, Pa.:	
Acreage of coal, acres	59,740
Acreage of surface, acres	18,273
Number of coking coal plants (bee-hive ovens)	60
Number of bee-hive ovens	16,661
In the Pocahontas district, McDowell County, W. Va.:	
Lease of 50,000 acres of coking coal.	
On this property there are to be constructed coking coal plants which will have in all 3000 bee-hive ovens. Work is now in progress on the first 1000 ovens.	
By-product coke ovens, located at Benwood, W. Va., at Sharon, Pa., and South Sharon, Pa., in all, ovens	357

Steam Coal Properties Owned by Subsidiary Companies.

In Washington, Allegheny, Somerset, Green and Fayette counties, Pa., an acreage of steam and gas coal is owned to the amount of	24,375
Sundry tracts of steam coal located at or near furnaces and mill plants of the subsidiary companies in Pennsylvania, West Virginia, Ohio and Indiana, and in Williamson County, Ill., of an acreage of about	6,500
Total steam coal, acres	30,875

Miscellaneous Properties Owned by Subsidiary Companies.

WATER SUPPLY PLANTS:

In the Connellsville coke regions various water supply plants having eight large reservoirs and seven pumping stations and extensive pipe lines. Water is supplied from these plants for use in manufacturing coke, and is also furnished for general purposes.

NATURAL GAS PROPERTIES:

Carnegie Natural Gas Company own in Pennsylvania, Ohio and West Virginia extensive natural gas territory, either owning or having under lease about 120,000 acres; also own 1134 miles of pipe lines and two pumping stations. Extensive natural gas territory and pipe lines are also owned by the American Sheet Steel Company in Pennsylvania, the gas therefrom being used at their Vandergrift plants; also by American Tin Plate Company adjacent to their plants in the gas belt district in Indiana.

ORE DOCKS:

Large forwarding ore docks situated on Lake Superior are owned as follows:

At Two Harbors, Minn., owned by Duluth & Iron Range Railroad Company, five docks.

At Duluth, Minn., owned by Duluth, Missabe & Northern Railway Company, three docks.

Receiving ore docks are owned at the furnace plants at Chicago, Ill.; Milwaukee, Wis.; Lorain, Ohio, and Cleveland, Ohio.

Receiving and forwarding docks are owned at Lake Erie ports as follows:

At Conneaut, Ohio, by Pittsburgh & Conneaut Dock Company.

At Ashtabula, Ohio, by Minnesota Dock Company and National Steel Company.

At Fairport, Ohio, by Pennsylvania & Lake Erie Dock Company.

At Buffalo, N. Y., by Minnesota Dock Company.

The corporation own 767.84 miles of railroad, with 259.27 miles of branches and spurs, and operate 178.02 miles under trackage rights. The mileage of second tracks is 139.45 miles, and there are 471.56 miles of sidings. The equipment consists of 471 locomotives and 26,164 cars.

The marine equipment consists of 71 steamers and 43 barges. During the season from April 3 to December 15, 1902, this fleet carried 10,777,636 tons of iron ore and 179,217 tons of miscellaneous freight. The gross earnings of the fleet were $9,059,999.94.

The report is accompanied by a large number of engravings, showing views of the different mines and properties, and by a map showing the location of the plants, railroads and mineral properties. The latter we reproduce herewith.

The monthly meeting of the New England Foundrymen's Association was held at Hotel Essex, Boston, Wednesday, April 8. There was a large attendance, more than the usual number of members being attracted by the promised papers and by the fact that they had matters of importance to discuss. Henry A. Carpenter of Providence, the president of the association, was in the chair. A brief business meeting was first on the programme, at which two new members were elected—the Starkweather & Williams Company of Providence, R. I., and Henry Souther of Hartford, Conn. Two papers were read, one at the close of the business meeting, before dinner, by O. C. Barrows, accountant for the A. Carpenter & Sons Foundry Company of Providence, on "Foundry Accounting and Methods of Estimating Costs of Castings," and the other, after dinner, by F. T. Towne of the Yale & Towne Mfg. Company of Stamford, Conn., president of the National Founders' Association, on "The Labor Situation in Our Foundries." Naturally both papers were heard with deepest interest. Mr. Barrows illustrated his with a series of cards used in his cost system, copies of which were given each of the members present. It was voted by the association to print this paper in full for circulation, including the illustrating cards.

Plans for a new hospital have been completed for the Lackawanna Steel Company. It is to be erected on their lands in West Seneca, and will be known as the Moses Taylor Hospital. It will be modern and beautiful in all its parts. It will have a frontage of 100 feet, with two wings, each of which will run back 80 feet. It will be three stories high, and the material used in its construction will be brick, granite and steel. The institution will be built in order that the steel plant officials may provide the best medical attention and surgical skill for any of their employees who may be so unfortunate as to be injured.

Contracts to the amount of $1,000,000 for work along the harbor and river front at Buffalo, N. Y., will be commenced and pushed to completion as soon as the river and harbor are free from ice. The most important work will be the dredging of Black Rock Harbor up to the Erie Canal Basin at Georgia street, and the dredging of the Niagara River, between Buffalo and Tonawanda, to a depth sufficient to permit the larger ore and lumber carrying vessels to reach the steel mills and lumber district at the latter place.

The Development of East Chicago.

The East Chicago Company, who have a capital of $2,500,000, have purchased the property of the Lake Michigan Land Company, the Standard Steel & Iron Company and the Calumet Canal & Improvement Company, at East Chicago and Indiana Harbor, Ind., having an aggregate capital of $4,000,000. This is one of the largest and most important real estate transactions ever made in the Chicago territory, and its results will be far reaching in further stimulating industrial enterprises. The lands owned by the East Chicago Company aggregate about 5000 acres, including 4000 lots, the remainder of the land being an acreage tract. The company also own buildings valued at $230,000, and in their treasury are bills receivable aggregating $650,000. The directors of the East Chicago Company are Robert Tod of New York, Albert DeW. Erskine, Honore Palmer, Potter Palmer, Stanley McCormick, S. H. Strawn, Owen F. Aldis, Francis E. Maitland and George W. Lewis of Chicago. The officers are: President, Albert DeW. Erskine; vice-president, Honore Palmer; treasurer, Potter Palmer, and secretary, George W. Lewis. Among the stockholders are H. C. Frick, John S. Kennedy of New York, J. Kennedy Tod, John V. Farwell, Jr., the Central Trust Company of New York, and certain English investment companies.

Beginning of Manufacturing Center.

For many months negotiations have been pending for the consolidation of all real estate interests at Indiana Harbor and East Chicago. The first definite step toward a manufacturing and shipping center at East Chicago was taken in 1898, when Henry C. Frick purchased of the Calumet Canal & Improvement Company 300 acres of land at East Chicago, about 17 miles from the Cook County Court House. During 1901 and 1902, after a period of quiet, there were a number of important transactions at Indiana Harbor. Sales of land in and around East Chicago in 1902 were made to the extent of $850,000, and now upward of 20 large manufacturing companies are located in this section. The important feature is the development of a deep harbor, construction having been carried on for some time.

The outer harbor is now nearly completed. The construction consists of a breakwater 1800 feet long, known as the north pier; a similar wall 300 feet southeast of that, extending into the lake about 1200 feet; a wall extending part way across the mouth of the harbor to protect the channel from the wash of the water from the southeast and collateral walls extending up to each side of the main channel, which will constitute the exterior walls of considerable areas of land now being filled in. The 1800-foot wall extends far enough beyond the mouth of the harbor to protect it from the violence of the waves, and the harbor will be an easy one for ships to make from any direction. The channel is 300 feet wide and 20 feet deep at the minimum.

A Canal 600 Feet Wide.

The harbor is to be extended inland by the construction of a canal 1 1-3 miles long and 200 feet wide, south and west. Bids have already been asked for. The canal is to terminate in a turning basin 600 feet wide. The minimum depth of this waterway is 20 feet. The district will have a dock and factory frontage of over 7 miles. Vessels will be able to navigate the canal under their own steam and deliver cargoes at the doors of the factories located on the banks of the canal.

Railroad Facilities.

Bascule bridges requiring 30 seconds to open and close are to be supplied by the railroad companies, contracts having been executed between Mr. Frick and the East Chicago Company on the one hand and the Pennsylvania, Lake Shore & Michigan Southern, and Baltimore & Ohio railways on the other, by which the railroad companies in consideration of the construction of the canal by the parties of the first part, together with certain moneys and lands turned over to them, agree to construct the bridges. The contracts require that bridges and the canal shall be completed within 18 months from the date of signing the contract. It is believed, however, that the canal will be finished within one year. It is noted that the Elgin, Joliet & Eastern Railway agreed some years ago to also construct a bridge across this waterway. The Lake Shore, Michigan Central and Pennsylvania railways have already purchased from 400 to 500 acres of land in and about East Chicago for terminal yards, and the Vanderbilt roads also have acquired large areas for similar purposes a little further to the east and south. The Indiana Harbor Railroad, which is already constructed to Hartsdale on the south, will be extended to the Brazil, Ind., coal fields.

Important Industrial Plants.

The population of East Chicago and Indiana Harbor is estimated between 7000 and 9000, and the demand for houses in this section is said to be very great. The 20 important manufacturing industries located in this section employ about 5000 men. Among the most important of the newer enterprises is the Inland Steel Company, who have invested $2,000,000 at Indiana Harbor, the capital stock of the company recently having been increased to $2,500,000. Eleven other important industries are said to have contracted to build works in this section, and it is estimated that before summer is over employment will be given to 7000 men by these enterprises.

State Aid Given.

Indiana Harbor is the only important lake harbor in the State of Indiana, and the State authorities have recognized the fact by important helpful legislation recently. The harbor was constructed under the approval of the Federal Government, and it is anticipated that Congress will make some appropriation for its maintenance, and also for the construction of a sea wall similar to those at Chicago and South Chicago. The following is a list of the important industries located in the section referred to:

	Amount invested.	Men employed.
Republic Iron & Steel Company	$1,000,000	1,500
Inland Steel Company	2,000,000	1,000
Grasselli Chemical Company	750,000	500
Emlyn Iron Works	250,000	1,050
Chicago Terminal Transfer Railroad car shops	200,000	225
Chicago Horse Shoe Company	150,000	....
American Rolling Mill Association	50 000	200
Morgan Electric Machine Company	50,000	75
Famous Mfg. Company	75,000	100
East Chicago Bridge & Iron Works	35,000	75
Graver Tank Works	50,000	50
Lesh, Prouty & Abbott Lumber Company	100,000	55
Treat Car Wheel Works	50,000	....
Seymour Mfg. Company / Cattle Guard Plant	20.000	25
Monitor Construction Company	20,000	50
Electrolysis Proof Conduit Mfg. Company	15,000	25
American Pitch & Coal Tar Company	15,000	25
Scott & Smith Company	5,000	10
Calumet Construction Company	25,000	50
Greer, Wilkinson Lumber Company	25,000	25
Totals	$4,885,000	5,070

Telephones in a New Field.—The International Railway Company of Buffalo have contracted with the Bell Telephone Company for the installation of an extensive system of telephones and signals upon all their city and suburban lines, which aggregate about 400 miles, reaching Niagara Falls, Lewiston, Lockport and Olcott Beach; also Queenston and Slater's Point in Canada. The instruments used will be of the combination receiver and transmitter type, and will be located about 1 mile apart on the city lines and from 2 to 3 miles apart on the suburban lines, and will enable the operating dispatcher at the Buffalo office to keep in close touch with all the cars upon the various routes, the car houses and power stations, reducing to a minimum those delays which unavoidably arise through accidents or mishaps to cars, and make it possible to quickly change schedules should unexpected congestion of travel necessitate. The instruments will be inclosed in locked iron boxes attached to trolley poles, to which motormen and conductors will be provided with keys. An electric signaling apparatus at each station will enable the dispatcher to signal the motormen when needed.

The Rapid Determination of Phosphorus in Steel.

BY GEORGE AUCHY, TACONY, PA.

Although it is customary to speak of rapid methods of analysis, and usual for authors of methods to give the time in which a determination can be made, yet, after all, the value of a method is within certain limits not dependent upon rapidity so much as upon ease of execution. It is true that the steel works chemist is frequently called upon to drop everything for the purpose of making some particular determination in the least possible time; carbon and phosphorus in the open hearth bath before tapping, for instance; but these occasions are the exception, and as a rule the important question in connection with any method is, not how quickly a single determination can be made by the method if attention is concentrated on it, but how many determinations can be made in a day or half day by it. In other words, up to a certain point a saving of labor is more important than a saving of time. Thus, for instance, a three-hour method requiring but a half hour of actual labor (the remainder of the time being taken up in standing, digesting and evaporating) would in general be more useful than a one-hour method requiring the operator's entire attention all that time to the exclusion of everything else. For phosphorus in steel the method which, both for time saving and labor saving, is far in the lead of any other is the Goetz. But although this method was originated over 15 years ago, it would seem to be almost unused in American works. The reason for this is to be found in its inexactness. Ukena declares the method entirely unreliable, Bormann, Von Reis and Reinhardt assert the reverse, but it is seen that results may easily be 0.009 per cent. wide of the truth. This is hardly satisfactory even for the most ordinary works' purposes. It has been found that the volume of the precipitate is affected by every condition—degree of acidity, amount of ammonium nitrate, &c.

It was thought by the writer that perhaps better results could be obtained by adopting the opposite procedure of diffusing the yellow precipitate uniformly throughout a measured quantity of water and comparing it with a standard treated in the same way. One gram of drillings was taken of standard and sample. After precipitation as usual in 16-ounce Erlenmeyer flasks, the liquid and precipitate was transferred to a 7-inch test tube and twirled in the centrifuge, and the liquid decanted off. (Attempts at making the comparisons without separating from the original liquid were not always successful. A steel containing 0.028 per cent. phosphorus by the regular method and by the color method here described invariably gave 0.042 per cent. in the original liquid.) The precipitate was then transferred to a carbon comparison tube and compared in the camera with the standard, exactly as in color carbon determinations.

This adds considerably to the labor of the Goetz method, but it was hoped that results would be as accurate as by any of the exact methods, all of which are much more laborious. The method, however, proved not so accurate as hoped for, results frequently coming 0.003 wide of the truth. But this is for practical purposes a small error, and as in a series of about 40 tests no greater error occurred, the utility of the method for works' purposes was about considered established when a result was obtained (0.036 per cent. instead of 0.025 per cent.) which showed that on rare occasions a very false indication may be made by the turbidity in this way. Still it is believed that the method is more reliable than the Goetz method.

But the only thoroughly satisfactory way of applying the centrifuge to the determination of phosphorus in steel is that described in the following scheme. In working the method above described it was found that in pouring the liquid away from the precipitate the last drops could be drained off without danger of carrying any of the precipitate with it.

The importance of this fact is obvious. It enables us to dispense with the filtration and continued washing, which is the most tedious and laborious part of all ordinary methods. One gram drillings in an 8-ounce Erlenmeyer flask is dissolved in 50 c. cm. of 1.13 nitric acid, oxidized with permanganate as usual; 10 c. cm. strong ammonia added, the liquid lightened up if necessary with strong nitric acid and precipitated in the cold with 50 c. cm. molybdate solution, Blair & Whitfield formula, and ten minutes' shaking. The liquid and precipitate is then transferred to a 7-inch test tube, allowed to stand half an hour (an exceedingly essential precaution—at least when precipitation is made in the cold), then whirled in the centrifuge three minutes rapidly or five minutes moderately so, and the liquid poured back into the flask in which the precipitation was made. The liquid still remaining in the test tube and precipitate is sufficient to cause an error equivalent to about 0.12 per cent. phosphorus, finishing the determination by Handy's method. If now the tube be nearly filled with water, the precipitate well mixed up with it, again whirled and poured off, this error is reduced to less than 0.001 per cent. The washing is also poured back into the original flask and mixed up with the liquid already there. The precipitate in the test tube is then dissolved in a measured amount of standard caustic soda and titrated with standard acid, as proposed by Hundeschagen and others, and worked up practically by Handy and others. The liquid in the flask, after the lapse of one-quarter of an hour or more, is shaken around gently to gather together in the center the yellow precipitate (which has by this time settled down) which remained suspended in the liquid in spite of the whirling in the centrifuge. This usually amounts to 0.002 or 0.003 per cent., and the object of gathering it together is to estimate the amount by the eye. For such small quantities this can be done accurately enough (a spot of yellow precipitate ⅛ inch in diameter is equivalent to about 0.007 per cent. phosphorus), but if the precipitate appears to exceed 0.005 to 0.007 per cent. this method of estimating it must not be employed, not only on account of the largeness of the amount, but also and mainly because such large residues are, in the writer's experience at least, invariably composed for the most part not of phospho-molybdate, but of ammonia molybdate or silico-molybdate, insoluble in the original liquid but soluble in water. Therefore such large residues must be treated like the main precipitate (whereby the exact amount of the phosphorus is obtained), or the superabundant liquid may be withdrawn, replaced by water, the residue shaken up with it, allowed to settle, and again observed. But, as before stated, such large residues are very exceptional, and the method is in this particular a distinct improvement over the usual filtering and washing process where the yellow precipitate washed through the filter paper often amounts to 0.01 per cent. phosphorus. In the writer's experience there is no paper that will not allow from 0.001 to 0.01 per cent. phosphorus to pass through (the sand and asbestos filter of Sargent is perhaps an exception), and the precaution of agitating the filtrate, after the lapse of some time, to get the yellow precipitate collected together for estimation by volume is one that he has always been compelled to observe.

Where steam or electric power is at hand the saving of time and labor effected by the use of the centrifuge in this way is very great. Even when hand power must be used the advantage is very considerable when a number of determinations are to be made at once. The machine used by the writer is the Universal of Eimer & Amend, with special sized holders. The following results were obtained by this method:

No.	Phosphorus present. Per cent.	Phosphorus found. Per cent.
1	0.094	0.094
2	0.023	0.022
3	0.025	0.026
4	0.030	0.030
5	0.053	0.053

Firth-Sterling Steel Company.—We are officially advised that the reports that negotiations were on looking to the absorption of the Firth-Sterling Steel Company of Pittsburgh, with works at Demmler, Pa., by the Crucible Steel Company of America are untrue. The company do not contemplate selling or making an alliance with any other concern. It is their intention to remain independent in the future as they have been in the past.

Iron, Steel and Shipbuilding in Scotland.

The Warrant Market.

GLASGOW, April 3, 1903.—There is not so much excitement as there was in our pig iron warrant market, and transactions do not now run up to 100,000 tons per week. But prices are maintained at a high and I fear an unwholesome level. While I write Scotch warrants may be called 57 shillings; Cleveland, 51 shillings 6 pence, and Cumberland hematite, 61 shillings. These are not the top figures which have been touched, but they are too high in relation to prices obtainable for manufactured material and to the general condition and prospects of trade. Warrants have fluctuated with the movements in other metals, and have been held back by the fall in Consols, but the bull element still predominates, although the feeling in the market is fidgety. Most of the small operators who went in some weeks ago before prices reached their present high range seem to have cleared out, and apart from the large dealers who still hold the bulk of the warrants (whether for America or not), the day to day transactions are now very much of the "cut and come again" order. This makes a feverish market, and consumers are not inclined to buy more crude iron than they actually need from week to week. Nevertheless, smelters are fully occupied with orders, and are able to send their output so promptly into consumption that they are not inclined to shade their prices. Scotch makers' prices are practically the same as quoted in my last letter. Up to the end of last week the shipments of Scotch iron totaled 88,563 tons for the year so far, which is 18,563 tons ahead of the corresponding portion of last year. In the same period the quantity of pig iron imported into Scotland from Cleveland was 133,015 tons, or 2074 tons more than in the corresponding portion of last year. Allowing for the nonarrival of foreign iron these figures would imply rather a decrease in our domestic consumption, but the difference does not amount to much. The shipments from the Tees are also keeping ahead of last year, including shipments to America against contracts made some time ago not at current prices; indeed the rise in prices here seems to have stopped the American demand, although it is still believed by many that the bulk of the warrants for Cleveland iron are being held on American account. Hematite is rather lower, and at 58 shillings to 58 shillings 6 pence for mixed numbers it is still some shillings relatively cheaper than Cleveland ordinary iron. Cleveland No. 3 is quoted by makers 52 shillings; No. 4 foundry, 51 shillings 9 pence; No. 4 forge, 48 shillings 9 pence; No. 1, 54 shillings 3 pence. There are warrants in circulation for only 122,400 tons Cleveland and 18,350 tons Scotch. To-day the warrant market has been flattened by receipt of cablegrams of *The Iron Age's* statement that Southern foundry pig has been reduced to $17.50 and that other iron is offering in the Middle West at $17.

The negotiations for a combination of a number of what we call the malleable iron works are reaching fruition. It will not be a general trade combine, as some of the newspapers have prematurely announced, but an amalgamation of a number of the competing concerns in the Coatbridge district—which is the "black country" of Scotland. I shall not enter into details just now as the situation is still indefinite, but in another letter I may dwell on this interesting development in Scotch industries. Meanwhile, it may be noted that the well-known and extensive iron works at Motherwell, where for half a century the Glasgow Iron & Steel Company have made the famous "Glasgow best" brand of iron, have been sold to P. & W. MacLellan, Limited, Glasgow, the extensive bridge and structural iron and steel manufacturers.

The Scotch Iron and Steel Trades.

The general position in the Scotch iron and steel trades cannot be described as marking any material improvement. Prices are firm because of the dearness of raw material, but the demand exhibits no activity, nor can any liveliness be expected while shipbuilding is so depressed. Some reduction in the output of steel plates has also served to stiffen prices. For ship plates the price here is now £6 per ton, while angles are £5 10s. to £5 12s. 6d., all less 5 per cent. For boiler plates the associated makers maintain the quotation at £6 10s. per ton. In Middlesbrough the current quotations are: Steel ship plates, £5 17s. 6d.; steel angles, £5 10s.; iron ship plates, £6 12s. 6d.; iron angles, £6 7s. 6d., and ordinary iron bars, £6 10s., all less 2½ per cent. The malleable iron trade is extremely dull. In armor plates William Beardmore & Co., Limited, have received an order for 1400 tons for one of the new first-class cruisers. The deplorable weather in Scotland during the first quarter of the year—excessive wind and enormous rainfall—has had a very depressing effect on the business situation; and the dearness of money and fear of financial complications abroad have also a restraining influence. The optimistic reports of the trade improvement in Germany are not generally credited here, and the American advices are followed with much interest. A collapse in America will break down the markets all round. There has not been much selling from Scotland to America lately.

The auditor of the Scottish Manufactured Iron Trade Conciliation and Arbitration Board announces that: "In terms of the remit, I have examined the employers' books for January and February, 1903, and I certify that the average realized net price at works brought out is £6 5s. 5d. per ton. This means no change in the wages of the workmen." The ascertainment of production and prices in the north of England and Cleveland district for January and February is issued by the secretaries of the Board of Conciliation for the Manufactured Iron and Steel Trade. The production for the two months of the selected firms realized the net average price of £6 4s. 3.33d. per ton. This return cannot be considered discouraging; but, on the whole, as satisfactory, for although there is a small decline in the net average price there has been some improvement in production for the two months which it covers as compared with the last two months of 1902. In respect of output November and December last were the worst ever known since the trade attained any standing. The production showed a decline on any previous two months of the year, on the average, of 3300 tons. Though the present return has not restored the production to the average named, there has been some move in the right direction. Plates, through shipbuilding being depressed in the early part of the year, show a decline on November and December. Angles show an increase of 379 tons. Iron rails, which are an almost infinitesimal production, show a small increase. The bar trade has improved to the extent of 1003 tons, though the quantity falls short of the first two months of last year by 1500 tons. Plates are not half the production of the corresponding period last year. The output of the four classes of iron is less than half what was presented in the first two months three and four years ago during the boom in the trade. Prices during the last 12 months have held their own better than production, there being only 11 pence decline in the net average rate of rails, plates, bars and angles. The present average rate—viz., £6 4s. 3d. is as against £6 5s. 1d. in the last two months of 1902, a reduction of 10 pence. Bars average £6 4s. 9½d., a decline of ¼ penny; plates, £6 1s. 10d., a decline of 1 shilling 5½ pence. Angles, at £6 4s. 6d., show an advance of 11 pence; and rails, at £5 15s. 4d., a rise of 7 pence. The net average prices now shown are £2 1s. 8d. below the maximum rates of the period of brisk trade nearly two and a half years ago. Lately there has been a tendency in prices of manufactured iron to advance, chiefly owing to higher rates having to be paid for pig iron, which ought to make itself felt in strengthening future returns. As there have been no very material fluctuations in the prices of manufactured iron during the last 12 months, there has been no alteration of iron workers' wages by the sliding scale since the end of March last year, when a reduction of 2½ per cent. occurred. There were reductions of 20 per cent. in wages mainly in 1901, from the very large advances in the previous two years. As against this take the return of the accountants to the Midland Iron and Steel Wages Board, which shows that the net average selling price of iron by the 12 selected firms in the Midlands during the first two months of the year was £6 17s. 11d. This is a reduction of 1 shilling 9 pence compared with the two closing months of last year. In accordance with the sliding scale, iron workers' wages remain at 8 shillings 9 pence per ton. Compared with

January and February last year the selling price shows a difference of only 1 penny per ton.

New Ships.

The output of new ships from the Scotch shipbuilding yards in March was 17, of a gross tonnage of 34,740 tons. This compares with 41,730 tons in February last, and with 35,980 tons in March, 1902. The Clyde proportion of the March output was 12 vessels and 33,630 tons; the Forth proportion three vessels and 745 tons, and the Dee proportion 2 vessels and 370 tons. For the three months ending March 31 the total production has been 96,257 tons, of which 87,460 tons was from the Clyde yards. This is the smallest quarterly total for five years, the comparison being with 106,000 tons in 1902, with 112,350 tons in 1901, with 99,930 tons in 1900 and with 117,940 tons in 1899. The largest item in the March output was a 10,500-ton twin screw steamer built by Alexander Stephen & Sons for the United Steamship Company of Copenhagen; and the next largest was a 10,000-ton twin screw steamer built by Caird & Co. for the P. & O. Company. These two liners, it will be seen, account for nearly two-thirds of the total tonnage produced. Then there was a Clan liner of 5200 tons built by Archibald MacMillan & Co., Limited; a 2750-ton cargo boat built by Russell & Co., Port Glasgow, for Scotch owners; a 1400-ton cargo boat built by the Ailsa Shipbuilding Company for a Scotch cargo line, and a 1000-ton screw steamer built by Russell & Co. for the New Ontario Steam Navigation Company of Hamilton, Canada. Of the total tonnage, 10,500 tons was for Denmark, 1900 tons for Germany, 1000 tons for Canada, 455 tons (a steam yacht) for the United States, 220 tons for Natal, and the rest for the United Kingdom. The new contracts booked during March were just a trifle more than the launches—say about 37,000 tons. They include liners for the Allan Line and the Elder-Dempster Line, to be built by Alexander Stephen & Sons, and a 1400-ton steam yacht for Mr. Vanderbilt of New York, to be built by the Ailsa Shipbuilding Company. The large vessel mentioned above as having been built by Alexander Stephen & Sons for a Copenhagen company is the third sister ship of the kind built by the same firm for the same owners. They are for the Denmark and United States trade, and are fitted up for passengers and cargo.

B. T.

The New Furnaces in Alabama.

Relative to recently published reports that 12 blast furnaces are building or projected in Alabama our correspondent at Birmingham sends us the following statement:

There is talk of 12 new furnaces, to be erected as follows: At Gadsden, four by the Alabama Steel & Wire Company, two by the Southern Car & Foundry Company and one by the Alabama Consolidated Coal & Iron Company, seven in all; at Battelle, about 25 miles south of Chattanooga, one by the Lookout Mountain Company; at Tuscaloosa, two by the Central Coal & Iron Company; at Ensley, one by the Tennessee Coal & Iron Company, and the Woodward Iron Company have plans for one at Woodward, and they are on the eve of commencement of erection. But the Alabama Steel and Wire Company will stop at the one furnace now nearing completion, and the Southern Car & Foundry Company will probably be satisfied to stop when they have finished one. The Central Coal & Iron Company at Tuscaloosa have one about completed, and the second may or may not follow. Summarized, we will have one new furnace in commission at Gadsden and one at Tuscaloosa some time during April, and the Alabama Steel & Wire Company's furnace will join them before fall. Add one each for the Tennessee Company, Southern Car & Foundry Company, the Woodward Iron Company and the Lookout Mountain Company, and we have seven new additions to be made during the year that are sure. This leaves four at Gadsden and one at Tuscaloosa as uncertain. There are others projected that will probably end only in talk. The newspapers magnify every rumor they hear.

Texas advices state that the members of trades unions are greatly excited over the Anti-Trust law recently passed by the Legislature of Texas, which, they believe, affects them in the provisions in regard to conspiracy, and are asking the Legislature to repeal the act. A mass meeting of the labor unions of Dallas has adopted resolutions calling on the Governor to submit for re-enactment at the special session the law of 1899 permitting labor unions to be organized and giving them the right to strike. It is contended by the labor leaders that the new Anti-Trust law repeals the statute of 1899.

The Production of Open Hearth Steel.

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of open hearth steel in the United States in 1902.

The total production of open hearth steel ingots and castings in the United States in 1902 was 5,687,729 gross tons, against 4,656,309 tons in 1901, an increase of 1,031,420 tons, or over 22 per cent. As compared with 1898, five years ago, when the production of open hearth steel amounted to 2,230,292 tons, there was an increase in 1902 of 3,457,437 tons, or over 155 per cent. The following table gives the production of open hearth steel ingots and castings, by States, since 1899:

States.	1899. Gross tons.	1900. Gross tons.	1901. Gross tons.	1902. Gross tons.
New England	57,124	74,522	170,876	179,923
New York and New Jersey	61,461	67,361	82,985	92,763
Pennsylvania	2,393,811	2,699,502	3,594,763	4,375,364
Ohio	117,458	130,191	184,943	278,854
Illinois	246,183	285,551	398,522	435,461
Other States	71,279	141,008	224,220	325,364
Totals	2,947,316	3,398,135	4,656,309	5,687,729

The open hearth steel made in 1902 was produced by 98 works in 16 States—Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Tennessee, Alabama, Ohio, Indiana, Illinois, Michigan, Wisconsin and Missouri. Ninety works in 14 States made open hearth steel in 1901. The States which have open hearth furnaces, but which did not produce steel by this process in 1902, were Kentucky and Minnesota. The erection of a large open hearth steel plant was commenced in Colorado in 1902, but open hearth steel had not been made down to the close of the year. This State will, however, probably make open hearth steel during the year 1903. Maryland and Michigan again made open hearth steel in 1902.

In 1901 3,618,993 tons of open hearth steel were made by the basic process and 1,037,316 tons were made by the acid process, while in 1902 the production by the basic process amounted to 4,496,533 tons and by the acid process to 1,191,196 tons. In the following table the production by States of both acid and basic steel in 1902 is given:

States.—Gross tons.	Basic open hearth steel.	Acid open hearth steel.	Total. Gross tons.
New England	110,961	68,962	179,923
New York and New Jersey	54,296	38,467	92,763
Pennsylvania	3,459,702	915,662	4,375,364
Ohio	195,700	83,154	278,854
Illinois	384,951	50,510	435,461
Other States	290,923	34,441	325,364
Totals	4,496,533	1,191,196	5,687,729

The increase in the production of acid steel in 1902 as compared with 1901 was 153,880 tons, or almost 15 per cent., while the increase in the production of basic steel was 877,540 tons, or over 24 per cent.

The total production of open hearth steel castings in 1902, included above, amounted to 367,879 gross tons, of which 112,404 tons were made by the basic process and 255,475 tons were made by the acid process. In 1901 the production of open hearth steel castings amounted to 301,622 tons, of which 94,941 tons were made by the basic process and 206,681 tons by the acid process. The following table gives the production of open hearth steel castings by the acid and basic processes in 1902, by States, in gross tons:

States.—Gross tons.	Acid castings.	Basic castings.	Total. Gross tons.
New England, New York and New Jersey	33,158	3,883	37,041
Pennsylvania	141,385	11,014	152,399
Ohio, Illinois and other States	80,932	97,507	178,439
Totals	255,475	112,404	367,879

Canadian Notes.

Mr. Shields and the Two Steel Industries.

TORONTO, April 13, 1903.—In Montreal, before departing for Sault Ste. Marie, Ont., to enter upon his duties as president of the Consolidated Lake Superior Company, Cornelius Shields, lately second vice-president and general manager of the Dominion Iron & Steel Company, made some interesting statements as to his estimate of the prospects of the two concerns between which he has exchanged positions. He denied emphatically the rumor that the withdrawal of his services from the Dominion Iron & Steel Company was because he had not confidence in the future of the company. He told the Montreal *Star* that he was retaining all his holdings of the company's stock. He said:

"I consider that the Dominion Coal Company, with their mines situated on tide level, have advantages such as can be shown by no other company in America. In the case of the big American companies there are always big charges for railway freight, while the Dominion Coal Company can take the coal right out the mines and place it on the steamers. The uphill work, however, so far as the coal company are concerned, has now been accomplished, and this is one of the reasons why I decided to take up the new work at the 'Soo.' It is now on a good paying basis, earning 8 per cent., with every possibility of earning 11 or 12 per cent. in the near future. No matter what happens it cannot be placed on any lower level than an 8 per cent. one.

"Then, as regards the steel company, I am convinced that their possibilities are entirely in the future. They are now almost on the verge of passing from being the manufacturers of raw material to being the manufacturers of the finished product. By the month of September, or at the very latest at the beginning of October, the mills now under construction will be in operation and the large profits now being made by the American manufacturers who are buying the raw material will be made by the company themselves. In the manufacture of steel it will not be necessary for the company to import a single ton of Swedish ore. It will be in this period of the existence of the steel company that the present lease will be found just as satisfactory to the shareholders of the coal company as to those of the steel company. Then will it be the proper time to take up the question of the amalgamation of the two companies. It is with much regret that I leave the works at Sydney, for my relations with all the officials, as also with the men, have always been of a most friendly nature."

Speaking of the Lake Superior Consolidated Company, he said:

"The result of my recent visit to the works at the 'Soo,' before accepting the offer made me by the directors of the company, convinced me that the possibilities are almost infinite. There are, however, a great many problems that must yet be solved.

"The greatest problem of all is undoubtedly that of the steel and iron. It is intended that open hearth furnaces, similar to those at Sydney, should be installed as soon as possible, and when they are the steel that will be produced from the ore of the Helen mine will be equal in quality to any produced in America. Then, again, the blast furnaces next to the steel rail mill are now nearing completion, and once the mill is in operation it will be run full time right along. It should undoubtedly prove one of the largest profit makers the company will have. The rails that will be turned out will be equal to any manufactured in the United States or Germany.

"The other works are almost too numerous to deal with them one by one. I consider, however, that with careful attention each one will be able to pay its own operating expenses and at the same time show substantial profits.

"There is, however, one thing that applies both to the Dominion Iron & Steel and Consolidated Lake Superior companies, and that is that the Dominion Government should grant their industries greater protection. If Canada is to become a great industrial country, and there is not any reason why it should not, greater protection must be afforded. The American manufacturers realizing the possibilities of Canadian industry are advocating free trade in order to retain control of the markets, and stop the progress of the present big industries. It is the duty of Canadians to prevent them from doing so, and it can be done if more protection is granted. The general feeling is that the Government will ask Parliament to grant a fair protection to steel during the present session."

The Canada Foundry Company.

The first metal in the extensive new works of the Canada Foundry Company, Toronto, was poured the other day, and the foundry is now in operation. The machine shop is partially in operation, and preparations are being made for the carrying out of contracts for the building of locomotives. To the new plant will be moved the Northey Pump Works, in which steam pumps and other machinery are turned out. From Queen street east the ornamental iron department will be removed to the building in which the Northey Works are at present operated. When the bridge shop is completed it will, the president says, be one of the largest in America. The plans are completed for the boiler shop, the machinery is ordered and it is expected that the department will be producing by next fall. The plant of the Canada Foundry Company may, in fact, be described as a system of general engineering works. Besides the products already referred to as included in their intended output, screws, nuts, railway trucks, railway supplies, valves, hydrants, water works' supplies, mining machinery, &c., will be made.

Tariff Changes.

There is considerable speculation as to the Government's course on the tariff question this session. No indication has so far been given by Ministers that there will be any new concessions of protection. In fact, the reception given at Ottawa to the Canadian Manufacturers' Association has discouraged that body, as well as the advocates of protection generally. It has been proposed that the association make quite a strong demonstration in support of higher duties, and that representatives of all the industries go down in force and urgently press upon the Government the necessity of meeting their views. There is some talk of a change of tactics, that instead of protesting further that the tariff should be taken out of politics, the manufacturers make it an important issue in politics, and unite to support the party that pledges itself unequivocally to promote the protection of home industry. It is possible, however, that the Government will take one step in the direction of further fostering home production. This is in the case of steel rails. A protective tariff on steel rails has been urged by both the Lake Superior Consolidated Company and the Dominion Iron & Steel Company. It is conjectured that the Finance Minister will go some distance in the way of granting their petition when he presents his budget. It is said, however, that the Government is not yet satisfied that rails of the quality required on Canadian roads can be produced in Canada. Tests up to the present time appear not to have been quite assuring to the Government. At a time when the Grand Trunk is providing for a new issue of securities to improve its line, when the Canadian Pacific is spending large sums extending its system, when the Grand Trunk Pacific is projecting a transcontinental line to be completed in five or six years, when the Canadian Northern is connecting the constructed links of its transcontinental road by building lines to bridge the gaps, it would be doubtful public policy to enhance the price of imported rails by a stiff duty without first making sure that the best of rails can be got in the required quantity at home.

Minor Notes.

Ex-Governor H. A. Stearns of Rhode Island, Dr. Henry Carmichael of Boston, R. W. Burbank, formerly Attorney-General of Rhode Island, and A. W. Chapman of Dorchester, N. B., waited on the Ministers of Finance and Customs at Ottawa a few days ago with a petition for a bounty on copper proportionate to that now paid on iron. The deputation represented the Intercolonial Copper Company, whose chief place of business is Dorchester, N. B. The stereotyped reply that the matter would be considered was given.

Iron lot No. 7, in the third concession of Hutton Township, was awarded to Dr. Gilbert Gordon, Toronto, by the Assistant Commissioner of Crown Lands. The other claimant was C. C. Yerkes of Northville, Mich.

A company called the Ottawa Steel Casting Company have lately been formed to carry on business in Ottawa, converting iron into steel according to certain patents which are said to effect material economies. J. A. Hunter, M.D., Philadelphia, is the inventor, and he is a member of the company, who are otherwise composed of Canadians. The Baldwin Iron & Steel Company's works have been bought by the company.

The steel output of the Sydney works was 14,600 tons in March, and Mr. Baker, superintendent of the company, expects it will be 15,000 tons this month.

A Montreal representative of German steel manufacturers says that ten steamers laden with steel will leave Antwerp and Rotterdam for Canada this month. Their cargo will be composed of billets, structural shapes, sheets, axles and hoops.

After a three months' shut down the Mond Nickel Works at Victoria mines, Algoma, have resumed operations. C. A. C. J.

Improvements at the Worcester Works.—The American Steel & Wire Company are to build a new machine shop at the South Works of the Worcester plant, formerly the Washburn & Moen Mfg. Company's. The building will be 90 x 180 feet, one story high and of modern fire proof construction. The present machine shops of the South Works are not concentrated. The new building will place the department under one roof. Two electric traveling cranes will be installed, one of 25 tons, the other of 5 tons capacity. The chief purpose of the new shop is to procure greater economy of machine production. Much heavy work is done in these shops, the company building their own machinery as well as making their own repairs. The present machine shop buildings will be devoted to storage purposes. The North Works at Worcester have a machine shop sufficient for their purposes. A new drop forging plant has been established at the South Works at Worcester for the manufacture of rail bonds. Formerly some of this class of work was done by Wyman & Gordon of Worcester. That firm's machines for the purpose were purchased by the American Steel & Wire Company, and in addition new machinery was installed, so that hereafter the Worcester works will manufacture all parts of their rail bond products, including the Daniels rail bond.

The Bethlehem Steel Company.—The Bethlehem Steel Company of South Bethlehem, Pa., propose to spend about $3,000,000 in improvements of their plant, so as to develop it on more economic lines. It is not proposed to take up any new departments of manufacture, but to expand more particularly the armor plate and ordnance departments, in order to meet the prospective increase in the requirements of the Government. Thus the capacity of the armor plate manufacture is to be brought up to about 10,000 tons per annum. This will not call for any increase in the open hearth plant or in the number of presses, but there will be added further equipment for treating armor plate by the Krupp process. The plan is also to undertake on an even larger scale than heretofore the production of finished ordnance. There will be added to the great machine shop five bays and a good deal of additional machinery, modern electrical cranes will be added and others will be put in in place of the present pneumatic cranes. There will also be purchased additional locomotives and steel rolling stock. Minor improvements are contemplated, among them additions to and enlargements of the stove power for the blast furnaces.

Providence, R. I., manufacturers are compelled to haul their own coal because of the strike of coal cart drivers in that city. However, the strike has been merely an annoyance to them, and has not resulted in a shortage of coal for their boilers.

The Cavite Floating Dry Dock.

WASHINGTON, D. C., April 14, 1903.—The Navy Department has awarded to the Maryland Steel Company the contract for the self docking steel floating dry dock for the United States naval station at Cavite, Philippine Islands, for the sum of $1,124,000. The contract requires that the dock shall be completed in 27 months, tested and turned over to the Government at the company's works at Sparrow's Point, Md. No provision is made in the contract for conveying the dock to its destination in the Philippine Islands, as the proposal accepted did not include the price for towing the dock to Cavite. The Navy Department has no funds from which to draw for this purpose and it will therefore be necessary before the dock is completed to procure from Congress a special appropriation to cover the cost.

The specifications require that the dock shall be so constructed as to stand all possible strains not only incident to the docking of battle ships of the largest class, but towing at sea without auxiliary bracing. It is provided that no portion of the dock or its connections shall have a stress of more than 10,000 pounds per square inch under the specified loads, or of 15,000 pounds per square inch in self docking, with a wind pressure of 30 pounds per square foot of exposed surface. The dock is designed to dock all classes of vessels of the United States Navy, either centrally or with the center line of the keel 1 foot off the center line of the dock, with a freeboard of 2 feet. The dock must be so designed that the entire weight of a battle ship may be safely carried by the main keel blocks or one-half the weight on each line of docking keel blocks in whichever position the ship may be docked.

The Treasury and State Departments have practically decided that foreign materials may be imported with benefit of drawback for use in the construction of this dock, but the contractors have not yet intimated that they will take advantage of this privilege. As heretofore stated, the State Department has ruled that the Philippines may be regarded as foreign territory for this purpose and also that the transportation and mooring of the dock may properly be regarded as an "exportation" within the meaning of the drawback laws. The question remaining—namely, as to whether the requirement that the dock shall be "of American manufacture" would admit of the use of foreign materials—is understood to have been decided in the affirmative by the Navy Department provided such materials are not so far advanced in manufacture as to more properly conform to the designation of "finished articles." Should the contractors decide to avail themselves of the drawback privilege in this connection they will be obliged to file a declaration and secure the issuance of regulations prepared by the Treasury Department in order to obtain the benefit of rebate of duty. W. L. C.

Large Structural Contracts Pending.

CHICAGO, ILL., April 13, 1903.—D. H. Burnham & Co., Chicago, are preparing plans for the new terminal railway station to be erected at Washington, D. C. The total cost is approximated at $4,000,000, of which $3,000,000 will be borne by the District of Columbia, the balance being divided between the Baltimore & Ohio and Pennsylvania railways. The station will be located on Massachusetts avenue. The train shed will contain 28 tracks. The approach from the east will be by a four-track elevated stone viaduct along the line now used by the Metropolitan Branch of the Baltimore & Ohio. The Pennsylvania Railroad is building a connecting track east from Bennings. The lines entering Washington from the south will enter the new station through a double track tunnel, 4900 feet long, under Capitol Hill. Mr. Burnham states that plans will be completed in about three weeks, at which time the dimensions and details will be made public.

Plans for the Wanamaker buildings, to be erected at New York City and Philadelphia, which are also being drawn by D. H. Burnham & Co., are nearing completion. It is estimated that 18,000 tons of structural material will be used in the Philadelphia building alone.

The Iron Age

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The Northern Securities Decision.

The decision of the United States Circuit Court of Appeals at St. Paul last week, holding that the tenure of the Northern Securities Company of the Great Northern, the Northern Pacific and the Chicago, Burlington & Quincy railroads is illegal, is probably the most momentous as well as the most important decision affecting the business interests of the country ever rendered by a United States tribunal. Naturally, and unfortunately it would seem, legislation both national and State has not kept pace with economical developments, which have been unusually rapid during the past five years. The courts cannot go any further than the interpretation of the law, it being insisted that questions as to the reasonableness or soundness of the economic views taken by railway managers and financiers cannot enter into the case as considered by the courts. Even though a proposition be wise and sound economically, if in conflict with the law as it stands on the statute books, according to a decision of the United States Supreme Court the proposition is legally void. The courts are bound to render decisions in accordance with the law and the facts presented, and if the laws are found inadequate or unjust, or outgrown, it remains with Congress and the State legislatures to repeal such statutes and to take action more in harmony with the advancement in industrial circles and economical ideas.

While the decision rendered at St. Paul may not be revolutionary, as characterized by ex-Attorney-General Griggs, there seems to be ground for his opinion in that the effect of the decision will be widely applicable and tend to impede progress on previous lines. Judge Thayer's vigorous opinion, covering the various phases of the Securities case upon many points, commands assent, but reasoning on the central and essential fact does not readily carry conviction, although superficially considered it receives ready assent. The mere language of the anti-trust law, indeed, seems to brand every contract, combination or agreement, however harmless or reasonable in itself, as contrary to law and public policy.

The court at St. Paul held, in harmony with the contention of the Government counsel, that the object of the Securities corporation was control, the ownership of the majority of the stock giving mastery and control and conferring the power to suppress competition between the interested companies. The court regarded the suppression of competition—and to that extent a restraint of commerce—as the natural and inevitable result of such ownership, and that what has been done through the organization of the Securities Company has accomplished the object which Congress has announced as illegal. That is, the Securities Company acquired the power to suppress competition between two interstate carriers owning and operating parallel lines of railroad. Competition, the court held, would not be more effectually restrained than it is now, under and by force of the existing arrangement, if the railroads were consolidated under a single charter.

But are the courts entitled to assume that the restraint of commerce was the intention of the Securities Company, even though the motive for competition between the alleged merged roads was destroyed? The question also naturally arises, is the law concerned with title, and has Congress the right to carry prevention of monopoly to the length of prohibiting transfer of stock or other property? It should be remembered that the defendants emphatically repudiated all monopolistic intent and asserted that the so-called combination was formed to protect important interests and to develop and foster rather than to restrain trade. There is a difference between destructive and constructive competition, and the very nature of the case would impel the management to act so as to increase rather than diminish the volume of business of the various roads interested.

Whether the Supreme Court sustains the judgment of the lower tribunal, there seems to be reason for the contention that it would be wise to modify the anti-trust act so as to legalize the regulation of commerce by which the distinction between destructive and constructive competition would be recognized.

It is the opinion of those who have given the subject most thought that the Northern Securities Company is the outgrowth of the highest economic intelligence in the country, and it seems probable that the country as a whole would be benefited eventually by the operation of the plan upon which the merger was based. Certainly the results thus far have been good, and it would seem that the motives actuating the promoters were sound in that they desired to eliminate destructive competition and to bring about economy in operation, as well as to render a better service to the public, upon whom they are directly dependent for success.

Our Enormous Steel Production.

The returns of the production of open hearth steel for the year 1902, just published by James M. Swank of the American Iron and Steel Association, are impressive and show with what giant strides steel manufacture has gone forward in this country in the last two years. A jump from a little over 10,000,000 gross tons in 1900 to nearly 15,000,000 gross tons is startling even in our industrial history, and it is an amazing fact that, in spite of the extraordinary expansion, we were forced to draw upon foreign sources of supply for a fair tonnage which our rolling mills could not get at home. In the last 11 years the production of Bessemer and open hearth steel in the United States was as follows:

United States Production of Bessemer and Open Hearth Steel Ingots—Gross Tons.

Year.	Bessemer.	Open hearth.	Total.
1892	4,168,435	669,889	4,838,324
1893	3,215,686	737,808	3,953,495
1894	3,571,313	784,936	4,356,249
1895	4,909,128	1,137,182	6,046,310
1896	3,919,906	1,298,700	5,218,606
1897	5,475,315	1,608,671	7,083,986
1898	6,609,017	2,230,292	8,839,309
1899	7,586,354	2,947,316	10,533,670
1900	6,684,770	3,398,135	10,082,905
1901	8,713,302	4,656,309	13,369,611
1902	9,306,471	5,687,729	14,994,200

The total steel production reflects the vicissitudes due to the wretched years of 1893 and 1894, the temporary recovery of 1895, the setback of 1896 and the almost continuous advance since that time, with the phenomenal records of the past two years.

The progress of the open hearth steel manufacture has been uninterrupted and in recent years brilliant, but the vitality of the Bessemer process is thoroughly proven by the great record of 1902. While it is true that only one new Bessemer plant is now under construction, counting the Lackawanna works as merely a removal, it is a fact nevertheless that the improvements and the remodel-

ing of the older works have greatly increased the capacity. It may be stated in a general way that the Bessemer metal will from now on hold its own fairly well.

The growth in the number of open hearth steel plants is partly due to the desire of independent rolling mills to supply their own steel, and it is interesting to note that while the United States Steel Corporation produced 6,759,210 tons of Bessemer ingots out of the total of 9,306,471 tons made in 1902, or 72.6 per cent., the corporation made only 52.5 per cent. of the open hearth steel ingots produced in that year, or 2,984,708 tons out of a total of 5,687,729 tons. Of the total steel production of the country the great consolidation made 65 per cent., or nearly two-thirds. With the Union purchase its tonnage will be somewhat larger, but that will be offset by the additions to independent steel works which are now falling into line.

The Earnings of Consolidations on Declining Tonnage.

It is a favorite contention with those whom our great prosperity now inspires with fear of the days of retrenchment that history will repeat itself and that earnings will fall rapidly as prices crumble. The pointer of a delicately poised balance, like that of the demand and the supply of the great staples, moves through a wide arc when relatively small additions are made to one or the other side of the scale. In the past, when there was not tonnage enough to go around, every producer made strenuous efforts to secure enough to reach his lowest cost through full operation, quite irrespective of the fact that the minimum cost varied among the numerous competitive plants within very wide limits. The weak as well as the strong were in the thick of the fray, and very low prices were quickly reached. There are many who argue that what happened in 1893 and 1894 will occur again when there is not business enough to keep all in full employment. These, we fear, do not take account of changed conditions—at least so far as the iron and allied industries are concerned. While we do not believe that there is any power which can hold prices in the face of an inadequate consumption, and while we differ from those who hold that we shall never again witness the low prices on iron and steel made during the last decade, we do believe that the movements will be less abrupt and that net earnings will shrink less violently on a declining market.

With a very large number of plants under one centralized management there will be a much better automatic adjustment to a shrinking tonnage, with much less violent declines in profits than have characterized the past. Even a cursory study of the conditions justifies this conclusion. A consolidation of a number of individual plants can, as the demand declines, stop one by one those works whose cost of putting product upon the market is highest, and it will be readily understood that it may even occur that the net profits may be little affected. The total earnings, of course, must fall off with the tonnage if the decline is large, but the net earnings per ton may average better as one after the other of the poorly equipped plants drops out.

This automatic adjustment to changed conditions in itself is a powerful factor in steadying the market when contrasted with the rough and tumble all round free fight of earlier days. The elements of competition of course are still present in every branch of the finished iron trade in this country, but the virulence of the struggle is not likely to be so great nor when it does take place to be as lasting.

In former years a decline of 20 per cent. in the tonnage might mean a total disappearance of profits to all but a few. We may well imagine a condition of affairs when such a forced restriction of output with a large consolidation in the field might mean little more than a corresponding reduction in the net earnings.

CORRESPONDENCE.

The Inventor and the Trust.

To the Editor:—The article by William Stanley, "The Inventor and the Trust," in your issue of the 2d inst., exposes a phase of trust policy which cannot be too harshly criticised nor too severely condemned. That the operation of such policy involves the tactics of the highway robber, the sneak thief and the pickpocket is clearly brought out by Mr. Stanley. That those who perform these acts are hirelings only makes their doings more obnoxious, and doubles the guilt of those who concoct such perfidious methods. That such men are "uneducated in the true, broad sense" goes without saying, but all this concerns them little.

If more broad minded and less short sighted they would see that it is necessarily more expensive in the long run to hire thieves to steal and to contrive means for hiding the stolen goods than to buy the same at a fair price, besides crippling or even killing the originator and producer of the very goods they covet.

E. A. UEHLING.

NEW YORK, April 13, 1903.

A Summer School for Artisans.

Announcement is made that the summer school for artisans which is held under the direction of the College of Mechanics and Engineering of the University of Wisconsin at Madison, Wis., will open July 6 next for its third annual session of six weeks. At the first session 44 students were in attendance, and this number was increased to 70 at the second session. The school has passed the experimental stage and is recognized as a practical and valuable institution. The departments of work include courses in heat, steam, gas and other heat engines; applied electricity; machine design; materials of construction, fuels and lubricants; shop work, including bench and machine work in wood and iron; foundry work, forging, tool making and machine construction and pattern work, and drawing. The school is designed for the benefit of machinists, carpenters or sheet metal workers, engineers, superintendents and foremen of shops, water works, power stations, electric light plants, factories, &c., and for young men who wish to qualify for such positions. Theoretical and practical instruction is furnished in the trades named, and the pupils have the advantage of the use of the finely equipped shops and laboratories of the College of Engineering. An entrance fee of $15 is charged for all students taking the course, with fees at the rate of 5 cents an hour of actual total time spent in the shops or laboratories. The entire outlay during the six weeks' term, including living and school expenses, is estimated at $50. All inquiries regarding the summer school should be addressed to F. E. Turneaure, acting Dean of the College of Engineering, Madison, Wis.

An experiment tried by an English naval engineer to test the strength of the small tubes in water tube boilers showed that they resisted pressures far beyond any that they could be subjected to in actual use. A copper tube of 1 inch outside diameter was plugged on both ends and a gauge fastened on. It was set over a blacksmith's forge and steam raised up to 2000 pounds per square inch, when it burst; this tube was 0.07 inch thick, the tensile strength of the metal being only 6½ tons per square inch. A steel tube of .¼ inches diameter coiled into a circle of 6 inches diameter and 0.704 inch thick stood 4788 pounds per square inch before bursting. Through defects in the material they sometimes give way at 200 pounds per square inch.

Heating and Ventilation of Railroad and Other Shops.

At a recent meeting of the New York Railway Club an interesting discussion took place upon the subject of heating railway shops and other one-story buildings of the same nature. While such buildings are very simple in construction, they are not so simple as might appear in regard to the problem of effectively and efficiently distributing heat and air. On account of the large amount of roof, wall and window surface the loss of heat is very great; and also because of this and the relatively great hight of the building considered as a single room, there is a tendency toward unequal distribution of the heat, the warm air rising to the roof and the cold air flowing to the floor, where it renders the workmen uncomfortable. It is important, then, not only that a sufficient quantity of heat should be delivered to the building, but also that it should be delivered where it will do the most good.

If an attempt is made to supply the heat directly by means of steam or hot water coils the best results are not obtained. The vicinity of the coils is apt to be uncomfortably hot from the heat radiated directly therefrom, while places at a distance are disagreeably cold. The heat transmitted to the air of the room by contact and convection from the coils is largely lost, since the hot air rises vertically and imparts its warmth to the roof and skylights. It is also to be objected to this system of heating that it makes no provision whatever for ventilation, the extended system of steam or water pipes is subject to damage by freezing during the coldest weather, and steam pipes have been shown to be frequently the cause of fire where they came in direct contact with wood or other inflammable materials.

Due principally to the reasons which have been given above, the direct system of heating for work of this character is falling into disfavor, and is being superseded by the fan or hot blast system. The distribution of the air by means of pipes should be so carried out that the lower part of the room is kept at a comfortable temperature, while at the same time no disagreeable drafts are produced. It has been found that by properly proportioning and directing the delivery flues most satisfactory results can be secured. Illustrating this point some very interesting examples were cited, at the meeting mentioned above, by C. H. Gifford of the B. F. Sturtevant Company. He said:

"In the first place, if you desire air or almost any other form of gas or substance at any particular place at any particular time, the best way is to provide a suitable conduit to deliver it there, and I would add, if there is any difficulty, which there may be, by air blowing on an individual workman, it is a simple mechanical detail to rectify it, and if you are unable to predetermine where the men or machines are to be located in a building, you can simply have an adjustable discharge opening from the pipe delivering the air, and if perchance it blows upon some one, there generally is some space near the person to which the air can be directed and therefore cause no inconvenience whatever.

"As an example of what can be accomplished by distribution, I have in mind a machine shop, that of the New York Shipbuilding Company, which as a machine shop is not dissimilar to one designed for railroad work. They have a building which I believe is about 1100 feet long, about 250 feet wide and 82 feet high. The proposition was to heat one-half of this building and leave the balance of it unheated. It was a problem that came to me, and I must say that I was a little feazed at attempting to heat one end and not have any interference from the other end. We, however, conceived the idea that there could be a partition put across the middle of the building about 12 feet high, and we could then bring the heated air down to the zone which it was desired to heat, which was not over 8 feet above the floor, and in that way we could perhaps confine the air in the space and not have very much effect on the rest of the building. It was something of a speculation and rather a bold attempt, when you consider entering into a guarantee which might involve a serious loss; nevertheless, it was done.

"The apparatus is arranged under the landing platforms of the gallery which surrounds the shop, so that it is out of the way of the cranes. Pipes are carried along beneath the runway of the cranes, and branches are brought down on the posts and discharge the air toward the floor, the outlet being in the form of a Y, which is adjustable.

"We were very much gratified after the plant was started to find that it performed just as it was expected it would, and it is surprising to note the difference in temperature between the two sides of that partition; it is almost the same as when you pass from the building out of doors. The result is simply due to the fact that the air was brought down and continually pressed down into the space which it was desired to heat."

Further emphasizing the advantages of correct distribution, Mr. Gifford says that it is "possible in some cases to introduce $50 worth of additional distributing pipe to carry the air where it is most needed, so that you can, on account of this, leave out $100 worth of heating apparatus. That is, you can get equal results by using smaller apparatus and less steam."

The adoption of the fan system permits the control of the heating apparatus and of the ventilation. During very cold weather, or in the morning when the building is being heated up, the air supply may be drawn from within the building itself, thus effecting a great economy of heat. In some buildings having a very high cubic space per occupant sufficient ventilation during the winter time will be supplied by the leakage of air through doors and crevices about the windows, by transfusion, &c. We quote E. T. Child, also of the Sturtevant Company:

"We have found, therefore, the most satisfactory heating will result from numerous pipes discharging on the outside walls at a point about 6 to 8 feet above and directed toward the floor. These pipes should be located from 25 to 40 feet apart, depending upon the character of the building. This arrangement causes the hot air to be blown downward, whence it spreads on the floor, keeping it warm, before it has a chance to follow its natural tendency and ascend to the roof. Hot air has a very bad faculty of getting up in the trusses, and if you blow the air directly at the floor and get the floor warm, at the same time keeping the outside of the building warm, your problem is practically solved. In the case of an underground duct, it is well to use short outlet pieces which will discharge the air along the walls at the floor.

"At the works of the Fore River Ship & Engine Building Company they have an overhead pipe system with drops on the walls, which was put in according to the regular practice. Later they added 50 per cent. to the building, and are now heating it with the same apparatus. That is, we picked out a fan heater which we considered to be the proper size for that particular building, and it worked in a perfectly satisfactory manner. Later the ship company added 50 per cent. to the length of the building. We extended the piping and carried drops on the walls every 30 feet, blew the air on the floor with ample outlets on the ends, and in the coldest weather the heat of the building, which is 50 per cent. larger than we would care to guarantee with our apparatus, was perfectly satisfactory to them. Their success was entirely attributed to the excellent system of distribution for the air.

"At the shops of the Atchison, Topeka & Santa Fé Railway Company the underground system was adopted and low horizontal outlets were provided, which distribute the air at the floor and along the walls. This is an extremely large shop, the contents being about 4,000,000 or 5,000,000 cubic feet. The shop is heated by four large apparatuses, and the underground ducts extend almost entirely around the building. The pipes are not over 3 feet high, the air being discharged horizontally along the floor, and I understand that the building is very satisfactorily heated.

"The galvanized iron pipe system, with drop pipes on the walls, has been used at the new shops of the New York, New Haven & Hartford Railroad at Readville, Mass., and with excellent results.

"The following general classification of railway

shops may be made: 1. Machine, erecting and car shops; 2, paint shops; 3, roundhouses.

"The second and third require special treatment. Paint shops require to be practically dustless, and consequently the air velocities must be low. The temperature requires to be higher, and it is customary to arrange to circulate the air in a much more thorough manner than in shops of the first class.

"This is done in the Pennsylvania Railroad shops at Altoona by means of ducts and in the New Haven shops, Readville, by a similar overhead system. There has been a great deal of hesitation among railroad men about installing the hot blast apparatus in paint shops. They are afraid of getting their varnish dusty. But I might name a dozen or so paint shops all over the country; for instance, the Boston & Albany shops at Allston and the New Haven shops at Readville, and there are several Western shops, all of which are heated with the hot blast system by a very ample distribution of air. The circulation is brought about by a counter exhaust system, which circulates the air, returning the whole or a part to the apparatus. There are two ways of establishing this return of the air; one by an underground duct system and the other by an overhead galvanized system. In the Pennsylvania Railroad shops at Altoona we have an installation that has been in a dozen years—I think it is one of the first we put in—that was made by returning the air from underground and back to the fans; using very ample distribution of air pipes in the discharge.

"In the Readville shops the air is brought back by means of an overhead galvanized pipe. In this way circulation is kept up in all parts of the room and thereby the paint is dried much more rapidly than it would be by any other system, where the air in the room is practically still."

The Pich Process for Brazing Cast Iron.

An interesting demonstration of the Pich process for brazing cast iron, which was briefly described in *The Iron Age* under the date of September 4, 1902, was given at the fourth evening reunion of the American Society of Mechanical Engineers in their New York house. The paper on this subject was by Wilfred Lewis, who it was found at the last moment could not be present. F. R. Hutton, secretary of the society, read the paper, which is as follows:

"Having recently had occasion to make use of this process and being impressed with its far reaching importance to the whole mechanical world, the writer believes it should be more generally known, and that its consideration is a matter in which this society cannot fail to be interested. He has accordingly witnessed the operation of repairing a broken pump cylinder at the laboratory of the American Brazing Company in Philadelphia, and obtained from a representative of that company a general outline of the process.

"Although the brazing process for making permanent joints in brass, copper and steel construction has been known and practiced for many years, it has been impossible to braze cast iron satisfactorily. It has seemed that the brass spelter could not affix itself to cast iron surfaces, as the greasy effect could not be gotten rid of. The process under discussion was invented by a German named Pich, who gave the active material, German though he be, the Latin name of Ferrofix. This compound, of which the chief ingredient is oxide of copper, is used by applying it, after mixing with the liquid, to the parts to be brazed. Heat is then applied to bring the temperature of the entire piece to be brazed, up to about 1800 degrees F. A flux, as for instance, boric acid, is applied and the spelter then placed on top of the joint in sufficient quantity to insure its permeating not only into the joint but into the actual metal on both sides, to the depth of about 1 inch. The effect of the Ferrofix is to burn out the carbon in the iron, so that the spaces formerly occupied by the carbon are filled up by the spelter, as can be distinctly seen by the use of a strong glass; the action may take place even to a depth of 3 or 4 inches.

"For ordinary shapes of cast iron, regardless of size, the operation is very simple, but difficult pieces, such as wheels or other shapes, where there may be a continuous circle or square, must be handled with care. In doing work of this character heat is always applied to the cold portion of the wheel after the brazing has been completed, so that as the brazing cools down the rest of the wheel is heated up and the whole then cools down together. This is necessary in order to avoid the possibility of a fresh fracture which might develop were the metal near the old one allowed to cool too rapidly.

"Often in repairing broken castings it is necessary to chip off quite a little of the iron, in order to bring the parts together, the internal strains being sufficient when released by fracture to throw out the casting from ½ to ¾ inch.

"It is found on heating up the parts that they will assume about the same position, relatively to each other, which they occupied when in the sand, the expansion filling up the space left by the chipped off metal. As the brazed joint has a greater tensile strength than the original iron, it does not open again when the piece cools down, so that there is practically the same strain in the brazed piece as in the original casting, the difference, if any, being in favor of the brazed piece, because the brazing does take up a certain small space.

"The fear has been repeatedly expressed by American machine builders that the brazed piece would not be as perfect an article as one which came from the shop without brazing, and without apparent flaw. In the light of experience, however, this fear is groundless as the brazed casting has shown itself actually stronger than it was originally. It is essential, however, in order to get this added strength, that the work of brazing should be properly done. The preliminary application of Ferrofix should be thorough so that the burning out of the carbon may be complete throughout the whole of that part of the metal which is heated, otherwise there would be a loss of strength rather than a gain. This has been demonstrated on test bars by engineering firms and technical schools. Where the bar was done hurriedly or with insufficient amount of brass spelter, there has been reduction in strength of from 5 to 10 per cent. When the brazing has been done correctly the strength has been increased by as much as 10 per cent.

"The economy of this process of repairing an iron casting cannot be doubted. In the case of a piece recently repaired for the Westinghouse Machine Company, the only other resource was to make a new casting, and break up the old bed plate, which weighed a little over 20 tons, for remelting. This involved not only a serious loss on the actual casting, but a loss of money also, as the machine was under contract for delivery at a certain time and the making of a new casting would have delayed delivery for a number of weeks. There seems to be no limit as to the size of casting which can be brazed, the Krupps, at Essen, having used this process on some of the largest pieces which they have turned out. Indeed, in Europe it is common practice to cut a complicated pattern into several parts, cast these parts separately and then braze them together into their final shape. The advantage is that the whole piece is likely to be more solid than a single piece would have been, even if that were perfect, and in the event of a serious flaw in any one of the pieces the loss is much less. Besides in making large and complicated castings the saving in labor is sufficient to justify the method.

"A crack in a casting is brazed in a similar manner to a joint, the preparation for the process differing only in that the crack is washed out with a solution of muriatic acid before the Ferrofix is squirted into the crack with an oil can. If the parts to be brazed have been in service for some time, or the joint is badly rusted, the iron is first burnt under a bright red heat, and then cleaned off with a wire brush.

"In the case of a flaw which involves the removal of the imperfect piece and the substitution of a sound one, the imperfection if it be small is drilled out; if large it is chiseled out and a piece of proper size fitted in position. This piece need not be a perfect fit—in fact it is better that it should not be a tight fit—as the expansion of the metal would tend to throw it out of place. The brazing material will make a perfect joint, even though there be some distance between the surfaces.

"In the case of a gear wheel where a tooth is missing a piece of steel or wrought iron is worked to the proper shape and pressed into place. If the crack in the metal is ¼ inch or more wide, it is filled in with thin pieces, which are first filed bright and covered with Ferrofix. There is no measurable change in the length or alignment of a piece which has been brazed; to all practical purposes the piece is still precisely as though it had not been broken. The only work with which there has been any difficulty up to the present time has been wheels of large diameter and very light construction. In such cases it has been found necessary to heat up the entire wheel in order to prevent fracture and make a perfect job.

"The field of the process appears to be unlimited, and it is even entering into competition with the other methods for brazing brass, steel, copper and the other metals which have been considered brazable. The advantage with these metals is that the work can be done not only much quicker, but much better and with greater certainty as there is no doubt about results when even ordinary care is exercised. The process does not require a skilled mechanic or expert brazer, and is therefore peculiarly advantageous for manufacturing plants where as a rule the skill necessary for the ordinary brazing operations is not available . The cost of Ferrofix is ½ cent per square inch of brazed surface, and the time taken on the job varies from five minutes to a couple of hours, depending upon the size of the piece to be heated."

The reading of Mr. Lewis' paper was followed by an actual demonstration of the work, a broken test bar of cast iron being securely mended. The bar was afterward broken and scarcely any trace of the so-called spelter, which is actually brass filings, could be seen.

J. S. L. Alexander, general manager of the American Brazing Company of Philadelphia, Pa., who control the American rights on this process, stated that his company had recently fixed a casting containing a large blow hole at the Cramp Company's plant in Philadelphia. He stated that the hole to be filled was about 4 inches in diameter, and described the method as follows: "The hole was first thoroughly cleaned and then given a coat of Ferrofix and of the spelter or brass filings. The casting was then heated to as high a temperature as practicable without melting it and a quantity of molten iron was allowed to cool to a point as near as possible to the temperature of the casting. The molten iron was then poured into the hole and the operation proved entirely satisfactory. The casting was broken up and the fractures in the vicinity of the mend showed no trace whatever of the spelter which had been used, proving that it had been entirely absorbed by the iron." Mr. Alexander stated that he believed still better results in this direction could be obtained by mixing a small quantity of the Ferrofix with the liquid iron, and that the company are now erecting a cupola and equipping a complete experimental plant in Philadelphia with a view of carrying these tests as far as possible.

He showed photographs of several very large castings which had been mended by use of this process. One of these was a large punch and shear which had 40 feet of cracks securely brazed. Another was a large planer bed which was securely brazed at Cincinnati. He stated that castings as large and heavy as 25 or 26 tons have been satisfactorily repaired, and that an order had just been received from a Pittsburgh concern to repair a large engine housing weighing about 40 tons.

A case recently tried in England concerning the construction of a steam boiler is of interest. Bad workmanship was alleged, the proof offered being the rivets which were driven out of defective plates; the said rivets being lopsided and badly skewed, showed that the holes were not fair when the rivets were driven. The defense asserted that this was caused in driving the rivets out, and to prove their case riveted two plates together and then drilled the rivet holes in them. When these rivets were driven out over one-half of them were badly skewed in the operation. It is quite possible to bend rivets in this way even when the holes are absolutely true with each other; a square head set is used by some wreckers, which is held on one side of the rivet head, at right angles to its body, and the head knocked off by a heavy sledge, but when the body of the rivet is examined it is easy to see whether the holes were true before riveting.

The National Association of Manufacturers.

(*By Telegraph.*)

NEW ORLEANS, LA., April 14, 1903.—The facilities of the New Orleans hotels were taxed to accommodate the crowds that poured into the city to attend the eighth annual convention of the National Association of Manufacturers. Special trains arrived from various directions, the largest single delegation coming from Cincinnati, numbering about 150. The special trains began to arrive as early as Monday morning, and came at frequent intervals during the following 24 hours. Among the manufacturers present were many whose names are widely known, not only in this country, but throughout the world. While the general purposes and objects of the association were freely discussed, the one theme which absorbed the greatest attention was the labor question. It was evident from the general tenor of the remarks made by the members of the convention prior to the opening session that they were prepared to take decisive action toward a movement to unite employers of every character in organizing effective opposition to trades unionism. Frequent denunciation was heard of such palliatives as arbitration and conciliation, as through these methods of handling the labor question the trades unions are steadily being strengthened. No antagonism was expressed against workingmen, but they were regarded as under the influence of designing leaders working for their own profit, who would have to be dethroned if manufacturing and general business interests are to be preserved from demoralization. Many of the members came to this meeting solely because they believed that very important action would be taken on this question, and the opening up of the subject was anticipated with keen interest.

OPENING SESSION—TUESDAY MORNING.

The convention was called to order in Tulane Hall at 10.50 Tuesday morning by James W. Porch of the Lukens Iron & Steel Company, vice-president of the association for the State of Louisiana and chairman of the local committee. Mr. Porch is an accomplished speaker, and made an exceedingly happy address of welcome, in the course of which he mentioned the fact that under the constitution of the State all manufacturing establishments are exempt from taxation until 1910. He introduced the Mayor, Paul Capdevielle, who charmed his auditors with the grace of his expressions and the warmth of his welcome. He was followed by the Governor of Louisiana, W. W. Heard, who admirably sustained the credit of his official position, speaking enthusiastically of the natural resources of the State and of the great future for New Orleans in international trade. Mr. Porch read notices from the Western Union, Postal Telegraph and American Telegraph & Telephone companies tendering free use of their facilities to the members for social purposes. He then introduced President David M. Parry of Indianapolis, who received an ovation from the audience. Mr. Parry made an eloquent reply to the words of welcome, in the course of which he made pertinent references to the growth of the business interests of the South, alluding with gratification to the manner in which the course of trade North and South is increasing. By Mr. Parry's request the reading of the president's annual report was dispensed with, for the purpose of saving time, every member having received a printed copy in advance.

Marshall Cushing of New York, secretary of the association, presented a few points from his report. He stated, among other things, that 2025 members are now enrolled, showing a very handsome gain during the year.

Hamilton Carhartt of Detroit, treasurer, reported a

good balance on hand, and added some remarks on the important work to be accomplished by the association.

After reading of notices of local entertainments the convention adjourned until 2.30.

TUESDAY AFTERNOON.

Tuesday afternoon session opened with the appointment of committees. The most important of these was the Committee on Resolutions, as follows: Richard Young, New York; J. W. Van Cleave, Missouri; D. A. Tompkins, North Carolina; A. B. Farquhar, Pennsylvania; A. H. Bullard, Connecticut; E. B. Pike, New Hampshire; M. W. Mix, Indiana; J. A. Jeffrey, Ohio; F. C. Nunemacher, Kentucky; C. N. Fay, Illinois; H. C. Atkins, Indiana; C. W. Post, Michigan; R. P. Gettys, Tennessee; Charles M. Wilkins, Pennsylvania; P. W. Gates, Illinois; E. F. Du Brul, Ohio.

The chairmen of other committees were as follows: Credentials, James F. Taylor, Ohio; Rules and Order, George T. Coppins, Massachusetts; Constitution, Wm. M. Taylor, Indiana; Nominations of Officers, John Kirby, Jr., Ohio.

An address on "Organization and Labor" was made by C. M. Post of the Postum Cereal Company, Battle Creek, Mich., who in temperate and dispassionate language portrayed the abuses perpetrated by labor organizations, arguing in favor of the organization of manufacturers to overcome such evils. But, he said, they must not oppose tyranny with tyranny. They must meet the question of wages, especially, with the utmost fairness. He laid down a system of economic principles, which were in the main well conceived, but conceded a point which is of vital importance and in which he will not be sustained by his fellow manufacturers—namely, that a workman acquires a vested right in his job. He set forth a plan for forming an organization of employers and employees to secure freedom from the domination of unions, believing that such an organization would speedily embrace in its membership a much greater number of workmen than are now in the unions. Guns, he said, will not be required in the day when workmen and their employers join hands in the cause of right, justice and personal liberty.

A large number of resolutions were read and referred to the proper committees. E. F. Du Brul of Cincinnati offered a series of ringing resolutions on the labor question, which elicited much applause, indorsing the independent movement among workmen, urging the formation of a central body to unite all employers in defense associations and pledging the members of this association to give preference to the goods of any manufacturer against whom a boycott may be declared by a labor organization. Other resolutions were by John C. Schmidt of Pennsylvania, on convict labor; by John Kirby, Jr., of Ohio, answering the attack by the *Wall Street Journal* on President Parry's annual address; by Elliott Durand of Illinois, regarding membership dues; by Geo. P. Altenburg of Ohio, favoring the establishment of better trade relations with Russia; by E. B. Pike of New Hampshire, favoring a labor bureau in the association, also demanding better service from the railroads; by C. N. Fay of Illinois, favoring publicity in applications for patents, also favoring a revision of the tariff, but preserving the principle of protection to American wages; by F. B. Kaetsley of Indiana, protesting against the delay in providing an elastic currency, and by John L. Ketcham of Indiana, favoring a change from the fixed membership fee to a *pro rata*, according to the number of men employed. A representative of business interests of Beaumont, Texas, addressed the convention, inviting the members to visit that city before returning home.

The convention adjourned until Wednesday morning.

WEDNESDAY MORNING SESSION.

Proceedings were opened by the singing of "America," followed by three hearty cheers for Labor Commissioner Carroll D. Wright, who was present to address the convention. James W. Porch made a number of announcements relative to entertainment features. President Parry introduced Colonel Wright, who announced as his subject "Modern Industrial Progress a Social Problem." The remainder of the session was devoted to a consideration of the report of the Committee on Resolutions.

MANUFACTURING.

Iron and Steel.

On March 24 the converting mill of the New Castle Bessemer works of the Carnegie Steel Company, at New Castle, Pa., turned out 2133 tons of Bessemer ingots and the bar mill rolled 1660 tons of finished material, which are the best 24-hour records at these works to date. The report that work had been started on another new blast furnace at New Castle, to be known as No. 5 stack, is untrue. The matter of building a fifth blast furnace at that plant is under consideration, but no definite decision in the matter has been reached.

The new furnace plant of the Pioneer Iron Company of Marquette, Mich., is completed and will probably be blown in on the 14th or 15th inst. It is expected that this will be one of the most modern and complete plants in existence. Austin Farrell is the manager, and the plant was built under the designs and supervision of Frank C. Roberts & Co. of Philadelphia.

The Singer Mfg. Company of New York and Elizabethport, N. J., who last fall purchased the furnace and mines of the Musconetcong Iron Works, at Stanhope, N. J., have under consideration the establishment of a steel mill. The matter, however, is in the hands of the second vice-president, who is now abroad, and will not be definitely settled until that gentleman's return.

The remodeled blooming mill of the Tidewater Steel Company, at Chester, Pa., has been started. It is now equipped with a billet conveyor and with two four-hole soaking pits. The company are now in a position to enter the billet market. At an early date another 50-ton open hearth furnace will be ready for operation.

The Boston Steel & Iron Company, 1017 Paddock Building, Boston, have plans for a new bridge and structural shop at Medford, Mass., which will double the capacity of their plant. The building will be of steel, two stories, 50 x 250 feet, and will be equipped with four 10-ton electric traveling cranes, bids for which they are now ready to receive. No power equipment is required. Charles E. Phenix, treasurer, is purchasing agent.

The Springfield works of the Republic Iron & Steel Company, Springfield, Ill., will be reopened about May 15, after a shutdown of several years. Upward of $250,000 has been spent within the past year in improving and remodeling the old mills.

J. E. Reeves of Canal Dover, Ohio, has offered the Dover Forged Iron Company a plot of ground at Canal Dover on which to build a proposed new plant. Ambrose Beard, formerly with the American Sheet Steel Company, and others are identified with the new project. However, definite plans have not been made for the building of the new plant.

The Maryland Steel Company, Sparrows Point, Md., have been awarded the contract for the steel floating drydock which is to be installed at the United States Naval Station, Cavite, P. I. The accepted bid was $1,124,000.

The Youngstown Mfg. Company, Youngstown, Ohio, manufacturers of bolts, nuts and rivets, iron and steel bars and shapes, have just placed in operation a new 10-inch merchant mill for the purpose of rolling their own material.

The Frankford Steel Company, Philadelphia, Pa., have awarded contracts for the erection of additions to their plant. They include a melting shop, 60 x 120 feet; hammer shop, 50 feet square, and a produce house, 24 x 51 feet. Operations are to be started at once. The machinery for installation in these buildings and for replacement in other parts of the plant is now being purchased. The contract for a new mill engine has already been made.

General Machinery.

Henry C. Cook, Ansonia, Conn., manufacturer of light machinery, dies, punches, &c., has incorporated as the H. C. Cook Machine Company.

George H. Bowler & Co. of Cleveland, dealers in second-hand machinery, have purchased the entire equipment of machinery formerly used by the George L. Squire Mfg. Company of Buffalo, N. Y. It is on sale at Buffalo and consists of a number of large and small planers, lathes, drill presses, bolt cutters, shapers, grinders, punches, shears and other machine tools; also several cranes, air hoists, steam hammers and a large line of general shop equipment.

The Bridgeport Safety Emery Wheel Company of Bridgeport, Conn., have recently completed a 15-foot heavy automatic knife grinder for the Sharon Steel Company, Sharon, Pa.

Moses Beal of Elyria, Ohio, has commenced work on a factory in that place, to be 70 x 80 feet, and it will be equipped for the manufacture of a patent core drill invented by Mr. Beal.

The Huber Printing Press Company of Taunton, Mass., are still buying tools for the new shops now being erected. It is understood among the machinery dealers that large contracts are still to be let.

The Stanley Electric Mfg. Company, Pittsfield, Mass., have sold the following apparatus to the New York Edison Company, supplementing the half million dollar contract reported in this column some months ago: 1000-kw. S. K. C. generators and seven 1500-kw. Booster sets. The Stanley Company have also contracted to furnish three 550-kw. S. K. C. synchronous motors to the Municipal Gas Company of Albany, N. Y.

The American Blower Company of Detroit, Mich., are furnishing induced draft apparatus for the Thornton Electric Company, Hickory, N. C.

Plans for the new car shops to be erected at Danville, Ill., by the Chicago & Eastern Illinois Railroad at a cost of $163,000 have just been completed. The buildings comprise a machine shop, 121 x 316 feet; blacksmith shop, 100 x 136 feet; boiler shop, 199 x 204 feet, and power house, 89 x 100 feet. W. E. Walker is the architect.

S. Weber & Son, Louisville, Ky., wholesale dealers in scrap iron and metal, are in the market for a few alligator shears.

The Flint-Lomax Electric & Mfg. Company, Denver, Col., machinists and founders, advise us that they will require considerable new machinery for the brass and copper rolling mill which they are about to install, as none of it has as yet been purchased. Just what equipment was destroyed by the recent fire in their machine shop is not yet known, but as soon as this can be ascertained they will be in the market for machinery to replace it.

The Hempfield Foundry Company, Greensburg, Pa., advise us that they are in the market for a machine for boring out small car wheels.

The Gadsden Pipe & Foundry Company, Gadsden, Ala., are having plans prepared for a new machine shop, 30 x 80 feet.

The Plainfield Tool & Equipment Company, recently organized at Plainfield, N. J., have secured a building 35 x 85 feet, two stories and basement, which they are equipping for general machine and tool work, and which will be placed in operation May 4. The company have purchased about $8000 worth of modern tools and machinery, mostly from the Cregar Agency and Charles E. Volrath of Philadelphia. The firm are composed of J. B. Longhead, R. H. Snider and R. W. Barwood.

The Duplex Roller Bushing Company, Camden, Maine, manufacturers of the Wellman duplex roller bushing, have bought out the Belfast Machine & Foundry Company, Belfast, and will move their business to the latter city. The company will buy the property adjoining the foundry and will erect an addition 40 x 75 feet. They will continue the manufacture of special machinery formerly carried on by the Belfast company in connection with their own lines. F. C. Pitcher is president and general manager, and C. E. McIntyre treasurer.

A 14 inch by 6 foot engine lathe and an elevator are required by Kutz & Gift, machinists, Allentown, Pa., for their new machine shop. The building will be 20 x 110 feet, two stories.

The Bosworth-Holding Company of Cleveland, dealers in new and second-hand machinery, have taken the agency for the Hamilton Machine Tool Company of Hamilton, Ohio.

The Atlas Engineering Company of Cleveland have been organized with $50,000 capital stock by W. O. Drake, F. E. Wright, F. W. Treadway and others of Cleveland. The company will do a general architectural, electrical and refrigerating engineering business. The members of the company have patents on special conveying machinery and refrigerating machinery which they propose to manufacture, and they will also engineer street railway and water power projects. It is not the intention at present to erect a factory.

The Atlas Bolt & Screw Company of Cleveland are erecting a building on Hamilton street, near Marquette street, a short distance from their present plant, where they will produce some of their smaller class of work.

The Ajax Mfg. Company, Cleveland, whose machine shop was burned down recently, are rebuilding the shop in a temporary manner. It is their intention eventually to erect a large plant in which to expand their business, but it is hardly probable that this step will be taken at once. Much of their work under way was not damaged except by water, and they have recently shipped to the St. Louis Car Company a 5-inch and a 4-inch forging machine and a No. 7 Bulldozer to the Peckham Mfg. Company.

The London Fence Machine Company of Cleveland, Ohio, are erecting a factory on Marquette street. They will manufacture a new fence machine.

The Marion Steam Shovel Company of Marion, Ohio, manufacturers of steam shovels, dredges and ballast unloaders, inform us that there is no foundation for the story recently published in local papers to the effect that owing to labor troubles they have decided to abandon their Marion plant and locate in some other city. They state that they are having no trouble with their men and have all the men they require. The report undoubtedly emanated from the fact that they are planning to establish a branch in some other city, but the matter has not yet been decided upon and will not receive immediate attention. The company have more business than they can take care of and need more shop room.

The Hobbs Mfg. Company are to replace the old tools in the shops of the Witherby, Rugg & Richardson Company at Worcester, Mass., with new machinery, which will be bought immediately. Not only will the old tools be discarded for new, but additional tools will be installed, which will be necessary in equipping the enlarged shops. The new building, already started, will double the capacity. The business of the Hobbs Mfg. Company will be moved to this shop and the manufacture of the box machinery of the Hobbs company will be run in direct connection with the wood working machinery business of the Witherby, Rugg & Richardson Company. The capital stock of the Hobbs company has been increased from $40,000 to $160,000, divided into $100,000 of common stock and $60,000 of preferred.

The L. W. Pond Machine & Foundry Company of Worcester, Mass., are rushed with orders for heavy planers. One new order is from the Birmingham Iron Foundry of Derby, Conn., who are buying tools for their new shops. This planer will be 84 x 84 inches with 54-foot table. It will be motor driven, requiring 30 horse-power. The weight of the machine will be 130,000 pounds. Another order is for the Crocker-Wheeler Electric Company of Ampere, N. J., the planer to have a table 96 inches wide and 24 feet long, to be 72 inches under housings. This will also be an electric driven machine. The Aultman Company of Canton, Ohio, are buying a machine 96 x 60 inches, with 14-foot table. The Landis Tool Company of Waynesboro, Pa., have ordered two planers, one 74 x 60 inches, with 24-foot table, the other 36 inches square and 24-foot table. Other orders bring the business on hand to be finished in the next few months up to more than $100,000. The company are adopting the combined cost-keeping and bookkeeping system of the Account, Audit & Assurance Company of New York.

The Ohio Steam Shovel Company of Toledo, Ohio, have been organized with $20,000 capital stock, with J. N. Ricard, president; William S. Russell, vice-president and general manager, and A. B. Laskey, secretary-treasurer. The company will manufacture steam shovels, dredges and excavators and will occupy the old Meilink plant. Additional shop room and offices will be erected on Cherry street between Summit and Water streets, contracts for which have been closed. The company start with some important contracts on hand for land dredges for irrigating purposes.

The Brightman Mfg. Company, formerly located at Millersburg, Ohio, announce that they have moved their plant and offices to Shelby, where they will occupy the plant formerly operated by the American Bicycle Company at the junction of the Big Four and Baltimore & Ohio railroads. The new quarters cover 4 acres of ground and are thoroughly equipped for the production of shafting, &c. The capital stock of the company has recently been increased to $250,000, fully paid up.

The capital stock of the George Whiting Company, Chicago, has been increased from $25,000 to $45,000 to provide additional manufacturing facilities and an increased working capital, made necessary by the larger volume of business which has been secured during the past six months.

The Textile Finishing Machinery Company of Providence, R. I., are to add a story to one of their shops on Harris street, to permit of an enlargement to their machine shops. It is understood that they will be in the market shortly for new tools. This company are the combination of the Granger Foundry & Machine Company and the Thomas Phillips Company of Providence, the Rusden Machine Company of Warren, R. I., and the Phenix Iron Foundry of Providence. The Textile company own the stock of the Phenix company, whose plant and equipment have just been sold at auction. The name of the Phenix Iron Foundry will be retained by the Textile Finishing Machinery Company as one of the constituent parts of the parent corporation.

The Boston Steel & Iron Company, 1017 Paddock Building, Boston, Mass., are in the market for four 10-ton electric traveling cranes. Charles E. Phenix, treasurer, does the buying. *See "Iron and Steel."*

The Pennsylvania Engineering Works, New Castle, Pa., builders of blast furnace and steel plant construction, general machine and plate work, and iron and steel cars, have about completed the building of a new boiler shop. Two traveling cranes have been installed, and the machinery now in the old shop, together with some new punches and shears, will be placed as soon as practicable. The new blacksmith shop is also completed. These improvements will add greatly to the facilities for handling materials and the capacity of the works.

Stevenson & Co., Baltimore, Md., engineers and machinists, contemplate erecting a new machine shop and warehouse, but will do nothing in the matter until the impending labor agitation in that city is settled.

The recently incorporated Watkins Laundry Machine Company have taken over the plant and business of the F. M. Watkins Company, Cincinnati, Ohio. The new company will enlarge their plant by the erection of additional buildings, and will extend the business by increasing their agencies in this country and Europe. All the new machinery required has been arranged for.

Power Plant Equipment.

Bids are asked until May 5 for installing a 3,000,000-gallon pumping plant at Atlantic City, N. J. Kenneth Allen is engineer and superintendent of water works.

The Union Motor Company of Portage, Ohio, have incorporated with $15,000 capital stock. Incorporators are Charles B. Rush, Howard C. March, Samuel R. Light, Charles M. Caldwell, Alex. Schroyer, Mason Putz and Alvin Mardo. They manufacture gasolene engines from 1¼ to 7 horse-power, air and water cooled, as well as a line of specialties for motor bicycles and light automobiles; also small gasolene engines for farm purposes. They are preparing to erect a large building, to be used as foundry and machine shop.

Bids are asked until May 8 for extending the water system of Fort D. A. Russell, Wyom. Capt. W. S. Scott is constructing quartermaster.

The Baker Motor Vehicle Company of Cleveland, manufacturers of electric vehicles, are planning to erect a large factory to take care of the increased demand for their vehicles. The factory building erected last year has proven wholly inadequate to their requirements. It is reported that they have secured a site in West Cleveland, adjoining the Lake Shore & Michigan Southern Railway, but the officials of the company state this matter has not been definitely settled. They are preparing plans for a power plant and are securing estimates on a 250 horse-power cross compound engine, to be direct connected to a 150-kw. alternating current generator. The Corlett Engineering Company are the engineers.

The Springfield Street Railway Company of Springfield, Mass., will make extensive improvements and additions to their power plant, the proceeds of the sale of $250,000 of the new stock just authorized by the Massachusetts Railroad Commissioners being intended for this purpose, as set forth in the commission's decree.

The Water Commissioners of Greene, N. Y., expect soon to have plans prepared for water works and an electric light plant. Address J. E. Bartoo.

The Greenfield, Deerfield & Northampton Street Railway Company, Greenfield, Mass., are having plans prepared for developing the water power at Gardner Falls. C. W. Clapp is engineer.

A belt driven pump with a capacity of about 100 gallons per minute will be required by the recently organized Shirley Village Water District, Shirley, Mass., who will install a $35,000 water system. No other machinery will be purchased. F. L. Fuller, 12 Pearl street, Boston, Mass., is engineer.

The Desmond-Stephan Mfg. Company, Urbana, Ohio, will establish a plant for the manufacture of the Desmond injectors.

Contracts for the erection of a power house at Painesville, Ohio, for the Cleveland, Painesville & Ashtabula Railway Company of Cleveland, have been placed with Speaker & Co. of Toledo. Contracts have recently been closed for the power equipment, which will include 900 horse-power of Sterling water tube boilers, two 600 horse-power compound condensing engines, to be built by the C. & G. Cooper Mfg. Company, Mt. Vernon, Ohio, and two 360-kw. alternating current generators, together with other necessary electrical equipment, to be furnished by the General Electric Company. A car barn and repair shop are also to be erected at Painesville, and equipment for the latter will be purchased before long.

The San Francisco & San Joaquin Coal Company of San Francisco, Cal., have decided to install machinery for the briquetting of coal dust, the high price of coal in California rendering this profitable. The briquetting presses will be driven by electric motors arranged to give any desired speed, from 20 to 550 revolutions per minute, in about 15 steps. Two 40 horse-power slow speed, 500-volt, direct current motors have recently been purchased for this purpose from the Westinghouse Electric & Mfg. Company, together with speed controlling rheostats designed to vary the speed of the motors within the above limits. The controllers will allow the motors to be operated continuously at any of the speeds.

The Lawton Mfg. Company of Wabash, Ind., engine and boiler makers, have been incorporated with $50,000 capital, by C. H. Lawton, N. H. Bledson and John R. Logan.

The Ft. Wayne Steam Specialty Company, Ft. Wayne, Ind., have been incorporated with $15,000 capital, by E. W. Puckett, Wm. Eger and O. R. Manlove. They will deal in specialties and supplies for engines.

Lambert Bros. of Anderson, Ind., who recently sold their plant to the combine, the Pioneer Pole & Shaft Company, will go into the manufacture of gas engines and hardware novelties. The buildings for the new plant are now being erected, the main one of brick, 90 x 300 feet, with two 60-foot wings.

Foundries.

The Coshocton Iron Company announce that their new foundry, pattern and machine shops at East Monongahela, Pa., are in operation, and they are now in a better position than ever to supply anything in the pipe, ball, bell die or axle box line. The office has been moved from Coshocton, Ohio, to Monongahela City, Pa.

The construction of the new plant of the J. L. Mott Iron Works of New York at Trenton, N. J., is going rapidly on. The company recently took out a permit for another large building.

The American Ship Windlass Company of Providence, R. I., have begun work on their new foundry. The building will be 105 x 155 feet and one story high.

The Springfield Foundry Company, Springfield, Mass., have purchased a site between the Boston & Albany and the New York, New Haven & Hartford railroads, where they contemplate the erection of a large foundry building as an addition to their plant.

The Union Mining Company, Mount Savage, Md., will erect a new foundry, 41 x 100 feet. Plans for the equipment have not yet been completed.

The Crown Casting Company of Jackson, Ohio, have purchased the plant and business of the Marietta Mfg. Company of Marietta, which they are removing to Jackson. The Marietta Mfg. Company manufactured steel ranges and heating stoves, while the Crown company make soil pipe and fittings. The lines will be manufactured in conjunction under the name of the Crown Casting Company. They will also take up the manufacture of a new heater known as the Southern. Plans are being prepared for an additional foundry building, 90 x 200 feet, and they will install another cupola, blower, &c. This will be used in the production of stoves, ranges and soil pipe fittings, leaving the present foundry exclusively on pipe.

Fire at the Bates Machine Company's works, Joliet, Ill., April 4, destroyed the foundry, causing a loss of $50,000. The company will rebuild as quickly as possible.

The Hempfield Foundry Company, Greensburg, Pa., will double the capacity of their plant by the erection of a new foundry, 40 x 90 feet, and pattern shop, 24 x 40 feet. All the equipment except a machine for boring small car wheels, for which they are now in the market, has been purchased.

The Fillmore Avenue Foundry & Iron Works, Buffalo, N. Y., manufacturers of machinery, furnace and building castings, have incorporated under the same name. The officers of the new concern are: Lyman P. Hubbell, president, and Charles T. Wallace, secretary and treasurer.

The Pittsburgh Steel Foundry of Pittsburgh, with works at Glassport, Pa., have recently turned out a very intricate casting, which consisted of a steel rack weighing 12,000 pounds, 23 feet long and 24 inches in diameter. It is said to be a very difficult casting to make and was shipped to the Morgan Engineering Company, at Alliance, Ohio.

John and Thos. Lavelle will invest $15,000 in a brass and iron foundry at Anderson, Ind. The main building will be of brick, 40 x 100 feet.

Bridges and Buildings.

Woodson Lewis & Brother of Greensburg, Ky., advise us that they propose to build a bridge across Green River, and will receive bids until May 1. Engineering companies who desire to bid on the work are invited to correspond with the firm.

The main office of the C. P. Hoffman Construction Company, recently incorporated, is located at Bangor, Pa. The directors are Charles P. Hoffman, Charles N. Miller and Jno. N. Hoffman of Bangor; Conrad Miller, Jno. A. Miller, William H. Bennett and J. J. Heintzelman of Nazareth, Pa. C. P. Hoffman is president and general manager; John A. Miller, vice-president, and John N. Hoffman, secretary and treasurer.

The Wabash Bridge & Iron Works, Wabash, Ind., state that they are exceedingly busy and cannot take care of all orders, though the plant is running night and day. Orders for a number of bridges for the Wabash Railroad and $100,000 of work from various other sources had to be turned down.

The Indiana Bridge Company of Marion, Ind., contemplated extensive improvements this spring and summer, but the plant has been overcrowded with work, and the improvements have had to be postponed till later in the year. They will be principally in the direction of giving more room for the structural department.

Fires.

The shops of the Maine Central Railroad, at Portland, Maine, were destroyed by fire April 10. The big machine shop was a total loss.

Hardware.

The Luther Bros. Company, North Milwaukee, Wis., say that their business has largely expanded, the increase in March being practically 50 per cent. over the preceding two months and about the same increase over March a year ago. From the present outlook they believe their business will increase fully 100 per cent. over a year ago. Their foreign inquiries are also more numerous than ever before, and have resulted in more direct business than previously secured.

The Barberton Lock Stay Fence Company, Barberton, Ohio, have been organized by E. S. Johnson and others of that place. Capital stock of the company is $40,000. They will establish a factory for the manufacture of a new patent fence.

The Berger Iron & Wire Works Company of Akron, Ohio, have changed their name to the Berger Iron Company.

The Foyer Pressed Steel Company have submitted a proposition to citizens of Bryan, Ohio, to locate their plant there. They ask the donation of a site and the purchase of $10,000 out of a total of $25,000 capital stock in the company, and they propose to erect a factory 100 x 100 feet, employing from 30 to 60 men in the manufacture of pressed steel toys.

The Crawfordsville Wire & Nail Company, Crawfordsville, Ind., have placed a contract for the erection of a building 50 x

200 feet, which will be utilized as a galvanizing shop. The equipment for the shop has also been purchased. Employment will be given to 25 additional men when the improvements are completed. The company report that during the month of March they contracted the largest volume of business in their history.

The Walden Knife Company, Walden, N. Y., contemplate building an addition of about 50 feet, three stories and basement, which will accommodate possibly 50 more men. Certain seasons of the year they are somewhat pushed with work, and they deemed it advisable to put up this little addition. They will also make some other improvements in the way of carrying up two stories higher two other buildings, which will make their factory buildings all the same hight. When the improvements contemplated are completed the company will have one of the largest and best equipped factories in their line in this country.

Miscellaneous.

The Halladay Journal Box Company have been organized at Marion, Ind., with a capital stock of $10,000, to manufacture and sell malleable iron journal boxes for railroad use. The stockholders are Lewis P. and James C. Halladay, John C. Haswell and Arthur Druley.

The American Attachment Company is the name of a new corporation organized under the laws of Maine, with an authorized capital stock of $1,000,000. The company have secured the entire rights for the United States of George John Stevens of London, England, in an attachment for sewing machines, for which it is claimed that it will do work when attached to the ordinary sewing machine, which otherwise must be done by hand or else by special machine not adapted to the ordinary work of the sewing machine. The officers of the new company are: President, Col. Arthur W. Pope of Boston; vice-president, Rufus B. Fowler of Worcester, Mass.; treasurer, Thomas H. Blair of Northboro, Mass.; directors, these officers and John L. Coffin of Northboro, Mass. The work of making the necessary dies has begun in the factory formerly occupied by the American Camera Company, at Northboro, and this may be made the manufacturing headquarters of the business, although that is not yet decided. It is certain, however, that either Northboro or Worcester, Mass., will get the factory. Colonel Pope, the president, is known everywhere in the cycle world; Mr. Fowler is a well-known patent lawyer, and Mr. Blair was for a long time head of a large camera business, until he sold out to the Eastman Kodak Company. The company expect to put their attachment on the market by July.

The Empire International Car Coupler Company have been organized, with an authorized capital stock of $500,000, and have opened an office in the St. James Building, New York. It is the plan of the company to establish a plant somewhere in the iron and coal regions, probably in or near Pittsburgh, for the manufacture of a patent car coupler. The officers of the company are: President, R. M. Cratur of New York; vice-president, A. M. Powell of Worcester, Mass.; treasurer, John J. Tandy of New York; directors, these officers and L. A. Drew of Burlington, Vt.; J. B. Genin of St. Albans, Vt.; J. R. Genin of Montreal, Canada; E. P. Lachapelle of Montreal; Charles E. Soule of St. Albans, of the Grand Trunk Railroad; John J. Tandy of the Empire Iron Works, New York, and A. R. Kennedy, H. West, J. B. Haney and A. G. Hill, all of New York. Executive Committee: chairman, A. M. Powell, L. A. Drew, J. B. Genin, John J. Tandy and R. M. Cratur.

The Bryant Electric Company of Bridgeport, Conn., are to build an extension to their present building, to provide for the increase of various departments of the plant. It is given out that no new machinery will be required for the present.

The buildings of the United States Reduction & Refining Company's plant, at Canyon City, Col., which were recently destroyed by fire, are being replaced by steel structures, which will be in operation the latter part of June. The loss was mainly on buildings, there being but very little machinery damaged.

The Niles Car & Mfg. Company of Niles, Ohio, are commencing the erection of a new combination blacksmith and machine shop, to be 60 x 120 feet. The present blacksmith shop will be used for storage. The company commenced operations a few months ago and are working up a very extensive business in the production of cars of all kinds.

The Ostby & Barton Company of Providence, R. I., said to be the largest manufacturers of jewelry rings in the world, are to double their factory by the erection of a new building six stories high and about 50 x 100 feet on the ground. They will install a large amount of new machinery.

The India Rubber Company of Akron, Ohio, whose plant was destroyed by fire recently, have commenced work of rebuilding their machine shop. It has not been decided whether or not the entire plant will be rebuilt. The company are one of the constituent companies of the Rubber Goods Mfg. Company.

Cleveland parties have placed an order with the Jenks Shipbuilding Company of Port Huron, Mich., for a large freight steamer, to be a duplicate of the steamer "W. H. Mack," now building at the Cleveland yards of the American Shipbuilding Company. She will be 374 feet over all, 354 feet keel, 48 feet beam and 28 feet deep, and will have a carrying capacity of 5000 tons of ore.

F. S. Barnum & Co., Cleveland, Ohio, are architects for a large office building to be erected on the Public Square. Contracts for the structural work have been placed with the Columbia Bridge Company, for fire proofing with the Keystone Fireproofing Company of Pittsburgh, and for heating with the Cleveland Steam Fitting & Supply Company. The Webster heating system will be installed.

W. O. Tolcott of Providence, R. I., manufacturer of belt hooks of all descriptions, reports that the demand is large for his heavy clinching hook, for use on rubber and woven belting, the device having proved adequate to the purpose. Mr. Tolcott has learned something of the condition of the malleable iron foundry business, for no less than six of the New England foundries have been compelled to decline to take on new patterns of hooks, so rushed are they with orders. He reports conditions exceedingly good everywhere, the nature of his business making it a pretty good barometer of manufacturing trade.

The Blume Mfg. Company, who make an automatic check row corn planter, have succeeded to the buildings of the Just Mfg. Company, Ridgeville, Ind., chair manufacturers.

Iron and Industrial Stocks.

Although a short week, through the closing of the Stock Exchange for the Easter holidays, it has been an eventful one, since it brought the decision in the Northern Securities case, which led to a sharp decline in values on Monday. Practically all of the industrials were affected, Colorado Fuel declining to 55⅛, Railway Spring to 30, Republic common to 17⅞ and preferred 75⅞, Tennessee to 61, United States common to 33⅞ and preferred to 83, while the new 5 bonds made a new record at 83¼. On Tuesday, however, there was a general rally.

Brown-Ketcham Iron Works of Indianapolis recently sold $200,000 of 6 per cent. cumulative preferred stock at 106, or $53 per $50 share. The company report to the *Financial Chronicle:* Common stock, $200,000; preferred stock, $350,000; surplus, $300,000; undivided profits, $45,067.20. The preferred stock (interest payable quarterly, February 1, May 1, August 1 and November 1) is redeemable at par Feb. 1, 1942, with option to redeem after February 1, 1913, at 115.50, or $57.75 per share and interest; after February 1, 1923, at 112.50, or $56.25 per share and interest; after February 1, 1933, at 107.50, or $53.75 per share and interest. The average annual net profits for the last four years are given as $129,181. The plant at Haughville, now a part of Indianapolis, has been in operation 22 years, and the plant at Huff's Station, near Greensburg, Pa., was completed late last year. Wm. H. Brown is president, John L. Ketcham, secretary-treasurer.

Tennessee Coal, Iron & Railroad Company.—The report for the quarter ended March 31 is as follows:

	1903.	1902.	Changes.
Net earnings	$947,108	$585,896	Inc. $361,212
Other income	6,032	.....	Inc. 6,032
Totals	$953,140	$585,896	Inc. $367,244
Interest on bonds and dividends	$185,140	$198,307	Dec. $13,167
Other interest	.....	3,602	Dec. 3,602
Taxes and administration expenses	14,362	15 627	Dec. 1,265
Total charges	$199,502	$217,536	Dec. $18,034
Balance	$753,638	$368 360	Inc. $385,278
Depreciation fund	114,243	118,333	Dec. 4,090
Balance	$639,395	$250,027	Inc. $389,368
Preferred dividends	4,966	4,966	.....
Surplus	$634.429	$245,061	Inc. $389,368

Dividends.—Henry R. Worthington, Incorporated, have declared a regular semiannual dividend of 3½ per cent. on the preferred stock, payable May 1. Books close April 20 and reopen May 2.

United States Cast Iron Pipe & Foundry Company have declared the regular quarterly dividend of 1 per cent. on the preferred stock, payable June 1.

International Steam Pump Company have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable May 1. Books close April 20 and reopen May 2.

Pennsylvania Steel Company have declared a dividend of 3½ per cent. on the preferred stock, payable May 1. Books close April 15 and reopen April 22.

Phœnix Iron Company of Philadelphia have declared the regular quarterly dividend of 1¾ per cent. on the preferred stock and a dividend of 2 per cent. on the common stock for the past six months, both payable April 30.

A. J. Strong has resigned his position as head of the tool designing department in the National Cash Register Company, Dayton, Ohio, to accept a position as traveling salesman with the Patterson Tool & Supply Company of that city.

The Iron and Metal Trades.

Surface indications are adverse in the Foundry Iron markets of the country, and there is a weaker feeling. Sales are largely confined to spot lots and to early delivery, only little being done for the second half. It must be noted, however, that the volume of these transactions is large, considering the circumstances. The cardinal fact remains that the consumption continues on a very large scale, and that our increasing production will be compensated for to a considerable extent by the cutting off of imports.

Our prices for domestic Iron now have reached a figure where it is unprofitable to import foreign Iron for distribution in small lots, or to ship larger blocks any distance into the interior. It is likely, too, that American furnacemen will in the future meet foreign prices, whatever they may be, on large transactions in coast markets. How far European makers will go to retain their temporary outlet here remains to be seen.

In the Central West the situation is somewhat peculiar. Practically the whole foundry industry covered for the first half of this year late in 1902, and relatively few of the founders have taken care of their requirements for the second half, the belief having been almost universal that better terms could be made by waiting. This course the events have justified. It is only the question now at what range of values the large consumers will take hold. The fact that leading Southern makers have openly established a price of $1 per ton lower for Eastern business than for sales to consumers West of Pittsburgh, while not an unprecedented course, does not impress consumers favorably. They argue that they are entitled to as low a price as is made in other sections of the country, and will probably wait until they are satisfied that they are not being discriminated against.

The Steel situation is peculiar in that it almost looks as though our producing capacity, enormous though it be, is inadequate. It is understood that the pressure upon the Steel works of the leading interest is such that some of the plants are facing the alternative of switching off from Steel Rail manufacture to the rolling of Billets. The pressure for deliveries of Finished Material, as the spring trade opens and as outdoor construction work becomes general, naturally puts exceptional pressure upon all the plants, and this condition may only last for the next few months, but it is an eloquent proof of the current consumption.

Although a little more Billet producing capacity is in sight from Eastern Steel works, the opportunities for importing foreign Steel continue and some round sales have been made of Slabs, Billets and Sheet Bars.

The Structural trade is somewhat hampered by labor troubles, but a very large tonnage is in sight. Thus a leading firm of Chicago architects are completing plans for buildings which will require from 45,000 to 50,000 tons of material, these including two Wanamaker buildings in New York and Philadelphia. There are some large bridges coming out, including one over the Potomac and another near Boston, while Chicago reports inquiries for 15,000 tons of Bridge work.

The Bar trade is rather quiet. The Western makers of Steel Bars have reaffirmed prices, as have also the manufacturers of Shafting.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Mar.15, 1903.	Apr.8, 1903.	Mar.18, 1903.	Apr. 16, 1902.
PIG IRON:				
Foundry Pig. No. 2, Standard, Philadelphia	*$21.00*	$21.00	$22.25	$19.75
Foundry Pig No. 2, Southern, Cincinnati	*20.20*	20.25	21.25	17.25
Foundry Pig No. 2, Local, Chicago	*22.00*	22.50	23.00	18.50
Bessemer Pig, Pittsburgh	*21.50*	21.85	21.85	19.25
Gray Forge, Pittsburgh	*20.25*	20.50	21.00	18.75
Lake Superior Charcoal, Chicago	*25.00*	25.50	26.50	21.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	....	30.00	31.00	31.00
Steel Billets, Philadelphia	28.50	28.50	28.50	32.50
Steel Billets, Chicago	....	31.50	31.00	....
Wire Rods, Pittsburgh	37.00	37.00	37.00	36.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	**18.50**	18.50	18.25	17.50
O. Steel Rails, Philadelphia	**21.50**	21.50	21.25	22.00
O. Iron Rails, Chicago	**24.50**	24.50	24.00	24.00
O. Iron Rails, Philadelphia	**25.00**	25.00	24.50	25.00
O. Car Wheels, Chicago	24.00	24.00	24.00	19.00
O. Car Wheels, Philadelphia	*24.00*	24.50	24.50	17.75
Heavy Steel Scrap, Pittsburgh	**21.50**	21.50	21.00	....
Heavy Steel Scrap, Chicago	18.25	18.25	18.25	16.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.93½	1.93½	1.95	1.92
Common Iron Bars, Chicago	1.85	1.85	1.86½	1.90
Common Iron Bars, Pittsburgh	1.85	1.85	1.89¾	1.80
Steel Bars, Tidewater	1.75	1.75	1.75	1.80
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater	*1.85*	1.85	1.95	1.85
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.73½	1.75	1.75	1.95
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater	1.73½	1.75	1.75	1.85
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Iron, Pittsburgh	*2.00*	2.00	2.05	2.00
Skelp, Sheared Iron, Pittsburgh	*2.05*	2.05	2.10	2.10
Sheets, No. 27, Pittsburgh	2.65	2.65	2.65	3.00
Barb Wire, f.o.b. Pittsburgh	2.60	2.60	2.60	2.90
Wire Nails, f.o.b. Pittsburgh	2.00	2.00	2.00	2.05
Cut Nails, Mill	**2.15**	2.15	2.10	1.95
METALS:				
Copper, New York	**15.00**	14.75	14.75	12.12
Spelter, St. Louis	**5.40**	5.40	5.25	4.17½
Lead, New York	4.65	4.65	4.65	4.10
Lead, St. Louis	4.57½	4.57½	4.55	4.00
Tin, New York	*29.65*	29.25	29.80	28.00
Antimony, Hallett, New York	7.00	7.00	6.75	8.00
Nickel, New York	40.00	40.00	40.00	50.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.99	3.99	3.99	4.19

Chicago.

FISHER BUILDING, April 15, 1903.—(*By Telegraph.*)

The most prominent feature of the week has been the indisposition to trade in either Iron or Steel, but there is reason to believe that the recent dullness is temporary only and will be succeeded by the long expected buying movement, which will be especially apparent in Pig Iron and Structural Steel. At the moment, however, the market for Pig Iron is weak and feverish and the little trading that has been accomplished has been on a little lower basis, No. 2 Southern Foundry Iron selling at $17, Birmingham, with rumors of this price having been shaded. Charcoal and Bessemer Iron also have sympathized with Foundry grades, but not to the extent of a week ago. Southern Car Wheel Iron has been especially scarce and strong. Bars, both Iron and Steel, have been very quiet. Official prices for the latter have been reaffirmed and trading in Iron has been mainly on the basis of 1.85c., although shaded in some instances. At the close there is an inquiry from a Car Wheel manufacturer for 2000 tons, this being the balance of the requirements of manufacturers who took the contract for 2200 cars from the Pennsylvania Railroad three weeks since. While the actual transactions in Structural Steel have been light, some very large contracts are pending both for railroads and buildings throughout the country. Plans for the Wanamaker buildings, one in New York and one in Philadelphia, as well as office structures in Cincinnati and Chicago and a club building at San Francisco, are being drawn in this city, and it is expected that contracts for Steel covering them will be placed within the next three weeks. The aggregate tonnage for these buildings is estimated at between 45,000 and

50,000 tons. For bridges and other railway work contracts for 15,000 tons are pending. The labor situation seems to be improving, but while a full settlement is expected between now and May 1 there is a disposition not to sign contracts which may be affected after commitment. Ten thousand tons of foreign Slabs and Sheet Bars are reported sold on the Eastern seaboard, duty paid. There has continued to be a fair inquiry for Rails, but the deliveries demanded by buyers are checking business to some extent.

Pig Iron.—The market for Pig Iron is still very much unsettled and prices are ragged, especially for Foundry grades. The tendency, however, is toward a lower level, sales of 300 and 400 ton lots of No. 2 Southern Foundry having been made on the basis of $17, Birmingham, and there are well founded rumors of larger transactions on the basis of $16.50, Birmingham, the latter for delivery during the second half of the year and the former for quick shipment. Large buyers are still disposed to hold off from placing contracts of any moment, but at the close there are two large buyers seeking the placing of contracts to a moderate amount. Car works and Pipe manufacturers are making some inquiries, but mainly for the lower grades, No. 3 and 4 Foundry and Gray Forge Iron. Inquiries for 3000 tons of Nos. 2 and 3 Foundry for the second half of the year and 3000 tons of Nos. 3 and 4 and Gray Forge Iron for May and June shipment. It is expected to bring out the attitude of sellers more clearly and may be followed by an adjustment of prices. It is reported that stocks in furnace yards at the South have increased materially since the first of the month, but most of this Iron is of Soft and Silvery grades, while the little demand is for strong Iron. There has been some little inquiry for Malleable Iron, with sales of 400 tons of Malleable Bessemer at $22, delivered at Milwaukee, and rumors of 500 tons at $21.50, Chicago. This latter sale, however, cannot be substantiated. Nothern furnaces offer to sell at the former price either for quick shipment or for the balance of the year. Valley furnaces, however, are asking $20.50, at the furnace, for Bessemer for quick shipment, and $20 for the last half, freight rates to Chicago being $2.30. There has been a further demand for Charcoal brands, with sales of single car lots of Lake Superior at prices ranging from $25 to $26, Chicago, according to grade, several cars of No. 1 selling at $25.75. Southern Car Wheel Iron is scarce and is relatively strong, 1000 tons having sold on the basis of $29.35, Chicago, for long delivery. Local Iron is entirely nominal, but single cars of Southern Foundry grades sold during the week on the basis of $17.50, Birmingham. The following are the prices current, f.o.b. cars, Chicago:

Lake Superior Charcoal	$25.00 to $26.00
Local Coke Foundry, No. 1	22.50 to 23.00
Local Coke Foundry, No. 2	22.00 to 22.50
Local Coke Foundry, No. 3	21.50 to 22.00
Local Scotch, No. 1	23.00 to 23.50
Ohio Strong Softeners, No. 1	25.80 to 26.80
Southern Silvery, according to Silicon	23.35 to 25.35
Southern Coke, No. 1	21.85 to 22.35
Southern Coke, No. 2	21.35 to 21.85
Southern Coke, No. 3	20.35 to 20.85
Southern Coke, No. 1 Soft	21.85 to 22.35
Southern Coke, No. 2 Soft	21.35 to 21.85
Foundry Forge	19.85 to 20.35
Southern Gray Forge	19.35 to 19.85
Southern Mottled	19.35 to 19.85
Southern Charcoal Softeners, according to Silicon	25.85 to 27.85
Alabama and Georgia Car Wheel	28.35 to 29.35
Malleable Bessemer	21.75 to 22.30
Standard Bessemer	22.00 to 22.30
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon	31.30 to 32.30

Bars.—A very quiet market has been experienced for both Bar Iron and Soft Steel Bars during the week under review. The demand for Bar Iron from car builders and railroads has fallen off materially, the largest individual sales being of 500 tons, of which three lots have been sold on the basis of 1.85c., Chicago, and smaller sales have also been made on this basis, with some transactions as high as 1.90c. It is worthy of note, however, that one or two independent mills lacking specifications state that they are willing to accept 1.80c. for a fair sized order of desirable sizes, and that one lot of 300 tons has been sold at this price. As a rule, however, it is difficult to shade 1.85c. The manufacturers of Soft Steel Bars, who met in Pittsburgh last week, reaffirmed the old basis of prices. The demand has been unusually light, there being nothing to stimulate purchases at this time. The few contracts that have been made are for early shipment, very few buyers for the season's requirements being in the market. The following are the prices current, f.o.b. Chicago, mill shipment: Bar Iron, 1.85c. to 1.90c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.16½c. to 2.26½c.; Angles, under 3 inches, 1.86½c. to 1.91½c., base. There has continued to be a fair demand in a jobbing way, and the market has remained steady without change in prices, which are as follows: Bar Iron, 2.15c.; Soft Steel Bars, 2c. to 2.25c.; Angles, 2.25c., and Hoops, 2.40c., base, from store.

Structural Material.—The market has been unusually quiet, there being an absence of large transactions; even the smaller trades have been without significance and of small tonnage, aggregating scarcely 2000 tons for the week. One lot of 600 tons for a local building has been sold from stock, the holdings of local companies having been increased materially recently. As a rule, there is a disposition to await the settlement of labor difficulties before commitments, but considerable preliminary work is being done while awaiting the outcome of the labor controversy. The most important business pending is that for Bridge Material, aggregating about 15,000 tons. The following are the prices current at Chicago for mill shipment: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. There has been a fair movement from local stocks, and the market has remained steady at the following price: Beams and Channels, 2¼c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

Plates.—Business during the week has been confined to small amounts, the largest transaction noted being for about 500 tons, without taking account of 1000 tons for a constituent company of the United States Corporation, which does not appear in the regular sales list. The mills being sold into November, contracts for earlier shipments must be made by modifying agreements with previous purchasers, which is possible in some instances. The market remains strong in tone and prices unchanged, as follows, f.o.b. cars, Chicago, mill shipment: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.10c.; Marine, 1.95c. to 2.10c. The demand from local stocks has continued fair, and the market has remained strong at the following prices: Tank Steel, ¼-inch and heavier, 2.15c. to 2.20c.; Tank Steel, 3-16 inch, 2.25c. to 2.30c.; No. 8, 2.30c. to 2.40c.; Flange Steel, 2.40c. to 2.50c., all f.o.b. warehouse, Chicago.

Sheets.—There has been a fair movement on old contracts, but less buying of either Black or Galvanized; but the market remains steady in tone, and prices are unchanged, as follows, for Black Sheets, carload lots, f.o.b. Chicago, mill shipment: No. 10, 2.12½c. to 2.16½c.; No. 12, 2.22½c. to 2.26½c.; No. 14, 2.32½c. to 2.36½c.; No. 16, 2.42½c. to 2.46½c.; Nos. 18 and 20, 2.56½c. to 2.60½c.; Nos. 22 and 24, 2.66½c. to 2.70½c.; No. 26, 2.76½c. to 2.80½c.; No. 27, 2.86½c. to 2.90½c.; No. 28, 2.96½c. to 3.00½c. Small lots from store sell at 15c. to 20c. above mill prices. Galvanized Sheets have been steady with a moderate movement, sales being made mainly at 75 and 5, Chicago, for mill shipment, although concessions are still made in special instances. Sales from store have been made on the basis of 75 and 2½ to 75 discount.

Cast Pipe.—Business during the week has been confined largely to small contracts, the aggregate tonnage being light. The largest sale reported is about 1000 tons of Culvert Pipe, on the basis of quotations. There are several important contracts for sizes ranging from 16 to 16½ pending, however, aggregating between 10,000 and 15,000 tons. While the market is easier in tone and the tendency downward in sympathy with Pig Iron, the market is yet without essential change, manufacturers selling at the following prices, f.o.b. on cars, Chicago: 4-inch, $34; 6-inch, $33; 8-inch, and larger, $32 for Water and $1 per ton higher for Gas Pipe.

Billets.—Local interests report the sale of 10,000 tons of foreign Slabs and Sheet Bars at $32, delivered Philadelphia, duty paid, but this Steel will remain in the East. The local market remains dull and prices are entirely nominal. It is reported that no Germans are available for shipment to this country before September, but quotations are made on the basis of $28.50, delivered at Philadelphia, and nominally $31.50 to $32, delivered Chicago. There are no domestic Bessemer Billets available, and Open Hearth Forging Billets are sold only in a jobbing way at $23 to $38, according to analysis, buyer and time of delivery.

Merchant Pipe.—Manufacturers continue to report a good demand from jobbers, while specifications and shipments on old contracts are on a liberal scale. The tone of the market is firm with no tendency toward fluctuation in prices. The jobbing trade has continued active. The following is the official schedule of discounts for carload lots, Chicago, base, random lengths, mill shipments:

	Steel Pipe.		Guaranteed Wrought Iron.	
	Black. Per cent.	Galvd. Per cent.	Black. Per cent.	Galvd. Per cent.
⅛ to ⅜ inch	66.35	56.35	63.35	53.35
½ inch	68.35	58.35	65.35	55.35
¾ to 6 inches	73.35	63.35	70.35	60.35
7 to 12 inches	67.35	57.35	64.35	54.35

Less than carloads, 12½ per cent. advance.

Boiler Tubes.—Manufacturers have experienced a very satisfactory trade during the week, some liberal orders being placed by distributers, who are increasing stocks as well as making liberal shipments on current orders. The following is the schedule of discounts for carload lots, mill shipment, Chicago:

	Steel.	Iron.
1 to 1½ inches	43.35	38.35
1¾ to 2½ inches	55.85	35.85
2¾ to 5 inches	60.85	45.85
6 inches and larger	55.85	35.85

Less than carloads, 12½ per cent. advance.

There is a good order demand for early shipment, although individual trades are not large and the market remains as previously quoted. The following are the discounts prevailing for shipment from local stocks:

	Steel.	Iron.
1 to 1½ inches	40	35
1¾ to 2½ inches	50	32½
2¾ to 5 inches	57½	42½
6 inches and larger	50	..

Merchant Steel.—There has been an improved demand for Agricultural Steel, one large contract for specialties having been placed for 1903-1904 season shipment. There has also been a little better demand for Machinery, Tire and Spring Steel for earlier shipment. The tone of the market is firm. The following are the prices current at Chicago for mill shipment: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 8c. for mill shipment; Specials, 12c. upward.

Rails and Track Supplies.—Sales during the week aggregate between 6000 and 7000 tons, and at the close one lot of 5000 tons and two lots of 3000 tons each are pending. As the roads seeking to place contracts for these latter amounts wish deliveries during the summer and none of the mills, even the Eastern works, are able to accept deliveries this side of November, it seems that buyers must accept Relaying Rails or modify their requirements. There is some talk of foreign Rails, but it results in nothing tangible. The demand continues to come from both steam and electric railways. Official prices remain unchanged at $28 for Standard and $27 for second quality, mill shipment. Light Rails are selling readily at $35 to $40, according to weight. Track Supplies are in good demand and the market remains firm without change in prices, which are as follows, at Chicago, for mill shipment: Splice or Angle Bars, 2c. to 2.25c.; Spikes, 2.10c. to 2.25c.; Track Bolts, 3½ to 3¾ inches and larger, with Square Nuts, 2.85c. to 3c.; with Hexagon Nuts, 3c. to 3.25c. From store 10c. to 15c. over mill prices are asked and obtained.

Old Material.—There has been a more amply supply of Cast Scrap and the market has developed a little easier tone as far as this grade is concerned, both Cast Borings and Heavy Cast Scrap being about 50c. per ton lower. The offerings of Railroad Wrought and Agricultural Malleable, as well as the lower grades purchased by rolling mills, are well sustained under moderate offerings and a fair demand. Car Wheels and Old Steel Rails are scarce and firm at full prices. Relaying Rails are wanted to a moderate extent and are held at about $32. The following are the prices current per gross ton, Chicago:

Old Iron Rails	$24.50 to $24.75
Old Steel Rails, mixed lengths	18.50 to 19.00
Old Steel Rails, long lengths	22.00 to 22.25
Heavy Relaying Rails	31.50 to 32.00
Old Car Wheels	24.00 to 24.50
Heavy Melting Steel Scrap	18.25 to 18.50
Mixed Steel	16.00 to 16.50

The following quotations are per net ton:

Iron Fish Plates	$21.50 to $22.00
Iron Car Axles	24.50 to 25.00
Steel Car Axles	23.50 to 24.00
No. 1 Railroad Wrought	20.50 to 21.00
No. 2 Railroad Wrought	18.25 to 18.75
Shafting	20.00 to 21.00
No. 1 Dealers' Forge	16.50 to 17.00
No. 1 Busheling and Wrought Pipe	14.00 to 14.50
Iron Axle Turnings	14.50 to 15.00
Soft Steel Axle Turnings	14.50 to 14.75
Machine Shop Turnings	14.25 to 14.75
Cast Borings	10.00 to 10.25
Mixed Borings, &c	10.50 to 11.50
No. 1 Boilers, cut	14.50 to 15.00
Heavy Cast Scrap	.... to 18.00
Stove Plate and Light Cast Scrap	13.50 to 14.00
Railroad Malleable	16.50 to 17.00
Agricultural Malleable	15.50 to 16.00

Metals.—The market for Copper continues unsettled with buyers disposed to hold off in anticipation of lower prices. It is claimed, however, that the lower prices in the East do not represent the market for best grades. The little trading which has been accomplished in this market has been on the basis of 14½c. in carload lots and 14¾c. in a jobbing way. Pig Lead continues in the same anomalous state previously noted and prices in the market are entirely nominal. Official quotations, however, remain at 4.60c. in 50 to 100 ton lots and 4.62½c. to 4.65c. in carload lots. Spelter has met an active demand and the market has remained firm on the basis of 5.40c. in carload lots for Slabs. Sheet Zinc has remained firm with a fair demand at 6¾c., Chicago. Old Metals have been a little easier in tone and Red Brass has declined ½c. Other kinds, however, have been without essential change. Heavy Cut Copper is selling at 12½c., Red Brass at 12½c., Copper Bottoms at 11¼c., Lead Pipe at 4.35c. and Zinc at 4.25c., spot.

Coke.—Most consumers in this market have been liberally supplied on contract and have not, therefore, been buyers in the open market. Offerings are liberal if not pressing, and lower prices have been accepted to effect sales. At the close, however, prices are little better than nominal. Virginia Coke is quoted at $7.50 to $8 and Connellsville at $8 to $8.50, spot, track, Chicago, but single cars have sold at 50c. per ton above these prices. One lot of ten cars of Furnace Coke, upon which demurrage was pending, sold at $6.50, on track, Chicago.

Philadelphia.

FORREST BUILDING, April 14, 1903.

There is very little change to report in the Iron and Steel market. In a comparative sense business is dull and prices are easy, but not quotably lower than they were a week ago. Recent events have not been of a character to induce much buying, but it can hardly be said that the market has gone off very much. "One swallow does not make a summer," neither does two or three weeks of dullness indicate that the period of active business is ended or that it will be in the immediate future. The market may not be any stronger than it was a week ago, but sellers appear to be less disposed to expect a bad break, although it is quite possible that rock bottom prices may not have been reached yet. The output of Pig Iron is the largest on record, and as considerable quantities of Pig Iron are afloat for American ports, it is evident that whether increased quantities are wanted or not, more Iron will certainly be available. So far accumulations are very trifling, and a great many furnaces are sold close up to July, so that for the second quarter there is no pressure from any source. For the last half of the year, however, buyers can make excellent terms, but there is little evidence of any disposition to take hold aggressively, and it is the general impression that lower rather than higher prices will rule later on. In any event it is believed that there will be ample opportunity to secure all the material required at to-day's prices, in case consumers change their mind on that point. There is a similar apathy in regard to Finished Material. The volume of business is well maintained, but the best that can be said in regard to prices is that they are no lower. A period of dullness may be expected, however, until labor settlements are arranged, although it is believed that there will be no great difficulty in arriving at agreements which will be satisfactory, as there are some evidences of a conciliatory feeling on both sides.

Pig Iron.—Taking everything into consideration, the market has acted very well. Prices are settling on what appears to be a pretty firm basis at about $21.50 for No. 2 X Foundry for shipments within the next 60 days, and at about 50c. less for the last half of the year. This, of course, applies to Philadelphia and adjacent territory, and if other districts maintain prices in like proportion it is hoped that business will be actively continued without further difficulty in regard to prices. The unsettled condition of the money market is an adverse feature, but if it proves to be only a temporary affair there will be good grounds for expecting renewed activity in Iron and Steel, which is the only guarantee against gradually declining prices. At the present time conditions are such that it is impossible to take any definite position in regard to the matter. Few people expect anything beyond a steady market without material change in prices, while some are decidedly pessimistic, but as already stated, things are too unsettled for any one to feel absolutely certain, no matter what position he takes. A good many ifs are required on both sides, as, for instance, "if" there is a continued monetary disturbance, the Iron trade must feel it accordingly and suffer accordingly. On the other hand, "if" it is merely a temporary affair, and "if" crops turn out as now seems probable, the last half of 1903 ought to beat the record. But who knows what may develop in the near future? The outlook was never more uncertain than it is to-day. Things may change in a few hours' time, and if the change is of a decided character, so will go the Iron market whether it be favorable or unfavorable. At present, however, it is a waiting market, and sales are only in moderate volume at quotations about as follows for deliveries now to July, but lower figures would be accepted for the last half of the year. At the moment it is difficult to give exact quotations, but the range for city or nearby deliveries is about as follows:

No. 1 X Foundry	$22.50 to $23.00
No. 2 X Foundry	21.25 to 21.50
No. 2 Plain	20.50 to 21.00
Gray Forge	19.00 to 20.00
Basic	19.75 to 20.25
Middlesbrough, No. 3	20.50 to 21.00
Scotch	22.00 to 23.50

Cargo lots, c.i.f.:

Low Phosphorus, 0.035	$21.25 to $21.50
Bessemer	20.25 to 20.50
Middlesbrough, No. 3	18.50 to 19.00

Billets.—There is a good deal of inquiry, but it is difficult to agree upon prices. O. H. Billets are quoted $32, at Eastern mills, with buyers at 50c. to $1 less. German Steel could be done at about $29, but deliveries are not easily arranged, so that there is no business to report at present.

Plates.—Business is fairly active, but nothing of importance has been on the market of late. There is the usual run of small and medium sized orders, and mills as a rule are fully employed, but there is not as much work on the books as there was some time ago. One reason for this is that the productive capacity is larger, and another that fuel and transportation can be had with less difficulty, so that there is little or nothing to restrict a full production. Prices are unchanged, and quoted as follows on the general run of business: Small lots, 2c. to 2.05c.; carload lots, ¼-inch and

thicker, 1.85c. to 1.90c.; Universals, 1.90c.; Flange, 2.10c.; Marine, 2.15c. to 2.20c.; Fire Box, 2.25c. to 2.30c.

Structural Material.—There are no special features in this department. Demand and supply are fairly well proportioned, but there is no difficulty in getting moderately prompt deliveries. Prospects are said to be favorable for a large business, but, pending labor settlements and other temporary disturbing influences, there is some hesitancy in closing large contracts. Prices are unchanged as follows: For Beams, Angles or Channels, ordinary sizes, 1.73½c. to 1.78½c., carload lots, as a minimum, with the usual addition for smaller quantities.

Bars.—The demand is not bad, although rumors, more or less persistent, in regard to cutting in prices are met with; but, as a rule, Best Refined Iron commands full regular rates. Outside mills that make only a few sizes have to cut under to get business, but taking everything into account, the demand and the outlook is fairly encouraging, with sales at 1.93½c. for carload lots as a minimum quantity and 1.75c. to 1.85c. for Steel Bars.

Sheets—Are in fairly good demand and prices are inclined to increased strength for prompt shipments.

Old Material.—The demand for Steel Scrap and for low priced material is quite active, but No. 1 Wrought, Car Wheels, Axles, &c., are less urgently wanted; so that there is some difficulty in making sales at prices recently quoted, which are as follows for deliveries in buyers' yards:

Old Steel Rails	$21.50 to $22.00
Heavy Steel Scrap	20.75 to 21.50
Low Phosphorus Scrap	27.50 to 28.50
Old Steel Axles	26.00 to 27.00
Old Iron Rails	25.00 to 25.50
Old Iron Axles	30.00 to 31.00
Old Car Wheels	24.00 to 24.50
Choice Scrap, R. R. No. 1 Wrought	23.25 to 23.75
Country Scrap	20.00 to 21.00
Machinery Scrap	20.00 to 21.00
No. 2 Light Scrap	18.50 to 19.50
No. 2 Light (Ordinary)	14.00 to 15.00
Wrought Turnings	16.50 to 17.00
Wrought Turnings, Choice Heavy	17.50 to 18.00
Cast Borings	11.50 to 12.00
Stove Plate	15.00 to 16.00

C. L. Mahoney having terminated his connection with the Diamond State Steel Company, has associated with George T. Johnson & Co., Drexel Building, Philadelphia, and is in charge of their Steel business handling Blooms, Billets, Slabs, Ingots and Steels of special analyses.

Cincinnati.

FIFTH AND MAIN STS., April 15, 1903.—(*By Telegraph.*)

A review of the Pig Iron market for the past week shows conditions practically unchanged. Prices are being maintained in most instances and the general feeling is one of strength. There are rumors of some small lots of No. 2 being sold as low as $17, and Gray Forge as low as $15.50, Birmingham, but these lack confirmation. The demand for Basic and Charcoal Iron is good, with the supply very limited. Very little business has been transacted during the week and that largely for immediate delivery. Scarcely any Iron has been bought for the last half, buyers evidently waiting for future developments. Inquiries are coming in generally, showing that buyers are keeping in touch with prices, ready to close contracts on short notice. The railroad companies are making heavy demands on dealers for Plates and Bars, with prices firm. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

Southern Coke, No. 1	$20.75 to $21.25
Southern Coke, No. 2	20.25 to 20.75
Southern Coke, No. 3	19.75 to 20.25
Southern Coke, No. 4	19.25 to 19.75
Southern Coke, No. 1 Soft	20.75 to 21.25
Southern Coke, No. 2 Soft	20.25 to 20.75
Southern Coke, Gray Forge	19.00 to 19.50
Southern Coke, Mottled	19.00 to 19.50
Ohio Silvery, No. 1	29.15 to 30.15
Lake Superior Coke, No. 1	23.15 to 24.15
Lake Superior Coke, No. 2	22.15 to 23.15
Lake Superior Coke, No. 3	21.15 to 22.15
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	$28.25 to $29.25
Lake Superior Car Wheel and Malleable	27.50 to 28.50

Plates and Bars.—We quote, f.o.b. Cincinnati, as follows: Iron Bars in carload lots, 1.92c., with half extras; same, in small lots, 2.20c., with full extras; Steel Bars, carload lots, 1.73c., with half extras; same, in small lots, 2.20c., with full extras; Plates, ¼ inch, in carload lots, are still nominally 1.70c.; 3-16 inch, 1.80c.; Beams and Channels, 1.70c., base.

Old Material.—We quote dealers' buying prices as follows, f.o.b. Cincinnati: No. 2 Wrought Railroad Scrap, $20.50 per net ton; Cast Scrap, $17.50 per net ton; Iron Rails, $23 per gross ton; Long Steel Rails, $22.50 per gross ton; Short Steel Rails, $18 per gross ton; Iron Axles, $27.50 per net ton; Car Wheels, $24 per gross ton; Low Phosphorus Steel $25 per gross ton, Heavy Melting Steel, $20 per gross ton.

Cleveland.

CLEVELAND, OHIO, April 14, 1903.

Iron Ore.—The first cargo of Ore for the present season was received at the lower lake ports last week. This came from Escanaba and was shipped to Conneaut. Ports at the head of the lakes are just beginning to send out boats, the ice conditions around them having prevented hitherto. With the beginning of Ore shipment the shippers themselves have suddenly assumed a new attitude. Heretofore they have sought to start out the boats as soon as posible. Now they have developed a tendency to withhold shipment for the time being until the docks at the lower lake ports have been cleaned up at least partially. The reason for this change of front is that the shippers want to be in position to give as good dispatch this year as possible. The vessel owners have interpreted this stand to be a confession that the shippers fear that the carrying rates for the summer will be high. Acting upon this belief one or two of the biggest owners have announced that they would depend entirely upon going rates for the coming season. Nothing has been done so far in the way of making season contracts and that action is still in future. The outlook for rates has not changed in the least and there is still a possibility that the season's business will be done on the basis of 85c. from Duluth to Ohio ports, although the shortening of the season by the strike has made some of the vessel interests hope for 90c.

Pig Iron.—In the Foundry grades buying for spot shipment has been given another impetus, during the past week, by a further delay to the River Furnace at Cleveland. This stack has been out of blast more or less since December, an overhauling having been necessary. Since it was blown in two months ago it has been making off-Iron, high in sulphur, and lately it has been necessary to go out of blast for a complete relining. Many of the concerns here in Cleveland which have been depending upon their contracts with that furnace have been forced to seek other sources of supply. The increased buying, therefore, is merely a shifting of the furnace responsibilities, without adding materially to the volume of the trade. The furnaces in this territory have been getting all of the business they can well care for and in a few instances are unable to meet the demands. The Iron for spot shipment is coming entirely from Southern Ohio or from other outside districts, the Valleys having nothing to offer. The prices for first half have not changed, being based on $22, f.o.b. furnace, Southern Ohio. The prices have held firm at $21 to $21.50, Valley furnace, for No. 2. This Iron is quoted at $21.50, Birmingham, for second half, to which a freight of $4.70 is added to make the Cleveland price. Basic Iron is still enigmatical. The present market is strong and the buying is continuous. The consumers are taking all the material which the furnaces can produce and are willing to take more. For the second half buying is holding off and those consumers who have not covered seem in no rush to do so. The prices do not change, being $21.50 to $22 for first half delivery and $20 for second half delivery.

Finished Iron and Steel.—At the meeting of the association on Bars last week it was decided to reaffirm last year's prices for this season—namely, 1.60c., Pittsburgh, on Bessemer and 1.70c., Pittsburgh, on Open Hearth. Two or three big contracts on Steel Bars have been pending for the last few weeks, and it was expected that the association action on prices would enable the mills to close them. The big concerns, especially agricultural implement works, are still holding off and are making no effort to close the contracts. Some of the smaller buyers have come in for moderate sized lots of Bessemer Steel Bars. In the Bar Iron trade the market is strong, with deliveries now getting rather hard to obtain. The price has held at 1.85c., Younstown. No big sales are reported. In Structural Steel the market, while not as strong as a year ago, is nevertheless brisk with plenty of business in sight. Some sizes of Shapes are rather easy to obtain and quick shipment of them is possible, but an assortment of sizes in an order would demand that deliveries be delayed for six months. The situation therefore might be said to be firm. General building through this territory is not as lively yet as it might be. The smaller mills are getting a little premium business from time to time, but their premium prices vary greatly with the mill, making a quotation almost impossible. The range is from 1.70c. to 1.85c., at the mill. Jobbers are selling small lots at 2.25c. as a maximum. The Plate trade is firm, but with the buying confined almost entirely to the smaller mills. Most of these have been well filled with orders at 2c., while some of them, in order to obtain a full mill, have accepted less. With the larger mills it is principally specifications on old contracts. The association price of 1.60c., Pittsburgh, is obtained for all of the material obtained from the larger mills. More inquiries for Rails have come in during the past week. This brings out the fact that by the heavy selling in this and other territories the Rail mills are about filled with orders for the remainder of the year, and that it will be extremely difficult to get any more orders taken. About all of the legitimate projects have been cared for, however, a good many of the present inquiries being on projects which do not give any

promise of ever developing into serious undertakings. The demand for Light Rails is still good, and the sales have been satisfactory. The prices remain at $28 for Standard and $36 for Light Rails, Pittsburgh, base. The Sheet market has been much stronger of late than it has been all spring. Direct mill sales have been so heavy that the many of the mills are beginning to move cautiously about taking further orders. The result is that prices have stiffened to the middleman, while not yet striking the general consumer. The quotations have not changed in the least from 3.10c. to 3.25c. for No. 27 Black Sheets out of stock, the same gauge bringing 1.85c. to 1.95c. at the smaller mills, which are well filled with orders. The whole tone of the market has been changed to a certain extent by the financial difficulties of the East, and the buyers through here have shown a hesitancy about big ventures for future consideration, and are therefore not buying heavily. Deliveries might be improved greatly.

Old Material.—The Scrap market has been strong with material scarce. Quotations have not changed from: No. 1 Wrought, $19.50, net; Cast Borings, $12, gross; Car Wheels, $22.50, gross; Heavy Steel, $20.50, gross; Iron Rails, $25.50, gross; Iron Axles, $27.50, net; Wrought Turnings, $14.50, net; Old Steel Rails, $21, gross.

Bialosky Brothers & Co., dealers in Scrap Iron and Steel, have removed their office and yards to 720-780 Kinsman street, Cleveland, Ohio. The new yards are located on the Pennsylvania Company's tracks and are equipped with shears, drop, cranes and other facilities for handling Scrap Iron of every character. The firm claim to have the largest Scrap yard in Cleveland, occupying nearly 10 acres.

Birmingham.

BIRMINGHAM, ALA., April 13, 1903.

The market was undoubtedly better the past week, though if one credited the "on dits" that were current he would infer that things were not altogether lovely. There were rumors floating around of prices being cut and of sellers being anxious to place material offerings. The market was closely gleaned, and special effort was made to confirm these reports. The conclusion at which your correspondent arrived was that they were "figments of the imagination." In one case where it was desirable to clean up the furnace yards because of special contracts for special grades the remainder of the year there was some recession in price, but it was not significant of weakness or want of confidence. Your correspondent knows that $17 was refused for No. 2 Foundry in more than one instance, and offers on that basis for other grades were promptly turned down. While the business done did not indicate a snappy market, it did indicate a steady, healthy market, and a better market than prevailed the preceding week. Since the first of the month one interest report their sales as covering 10,000 tons, and others, while not naming the tonnage they have registered, say that their sales show a healthy condition of affairs and fully up to their expectations. If there have been concessions they have been well kept. The leading interests most positively assure your correspondent that they are maintaining the prices lately promulgated and know of no offerings below them. There have been some orders registered of 1000 and 1500 ton lots, and in some instances the delivery has been extended into the last half of the year. The reports indicate that the sales for this delivery are on the increase. As we near the second quarter the premium in price that has obtained for prompt and nearby delivery is diminishing. As to the character of the buying, there is nothing significant in it. Some large buyers have taken some lots, but none have taken Iron in large volume. The buyers of medium and small lots have been the mainstay of the market, their wants being of sufficient magnitude to keep it steady.

Shipments are now free and will continue to be until, at least, the old business is cleaned up. The time that will take is only a short period. Cars continue to be furnished with greater freedom. A good deal of dissatisfaction has been engendered by establishing a price for one district and a more favorable price for another and competing district, and some friction may be expected to grow out of it; and if there is any cutting it will be owing to the fact that it is hard to recollect that the buyer lived in the higher priced district. Eventually all buyers will be given the same price. It is bound to come to that. It's a trite old saying that "one man's money is as good as another's," and where he lives ought to cut no figure in the price demanded of him. It is a matter of interest to the trade at this juncture to know the number of furnaces in commission in Alabama, so that some approximate idea can be formed of the production the remainder of the year. The Tennessee Company lead with 14 furnaces, of which 12 are in commission at present, five being located at Bessemer and five at Ensley. The Sloss-Sheffield Company have a total of seven furnaces, of which four are located here and three at Sheffield and Florence. The Republic Company have three furnaces at Thomas, one being at present out of commission. The Alabama Consolidated have two at Ironton and one at Gadsden in blast, with another approaching completion at Gadsden. Then there is the Tutwiler, the Lacey-Bueck, the Tuscaloosa, the Talladega, the two Woodstock at Anniston, the Williamson Furnace here, and two at Sheffield controlled by the Edenborn interests, to which must be added two at Woodward and the Jenifer. The total is 39 Coke furnaces. In 12 months this total will be increased by at least seven new furnaces on whose erection we can safely count, making the grand total 46 Coke furnaces. There is a possibility that at the end of 12 months the grand total will be 50 furnaces, including those that may be under way but not completed. There are five Charcoal furnaces in the State, but only a portion of them are continuously active.

The Pittsburgh & Southern Coal & Iron Company were incorporated the past week by G. W. Hale and M. M. Bosworth of Pittsburgh and H. E. Carr of this city. They are capitalized at $300,000, with privilege of increasing to $3,000,000. Their headquarters will be here. They propose to do a mining and manufacturing business, erect furnaces, &c. One of the incorporators, whether justly so or not, is credited with representing H. C. Frick of Pittsburgh. There are rumors from good sources concerning the establishment of another by-product plant, involving the expenditure of at least $200,000; and there is a scheme being worked for the consolidation of all the independent Coal companies in the State. If successful, it will place under one control the principal Coal fields of the State. It will, of course, not include those corporations working their own mines. A few other incorporations were made, but none of them were of moment. President Shuier of the Alabama Steel & Wire Company announces that it is the intention of his company to erect a Soil Pipe plant which in magnitude will exceed anything of the kind in the South. Its location will be near Gadsden.

The story is revived of a new Pipe plant to be established at Bessemer, and there is such an air of probability about it that one is inclined to give currency to the report.

There has never been a time since these letters were commenced that there has been such activity in the examination of offering properties as now prevails. There seems to be unlimited capital offering for good investments, and there is no difficulty in interesting capital in any enterprise that has any promise of profit. We are getting too much of a boom, and there are many here who have had such an unhealthy experience of its bad effects that they regard the permanency of present conditions with distrust. We may yet be charged with taking in the stranger, but things look so inviting that many are speeding yet to get in on the ground floor.

Pittsburgh.

(By Telegraph.)

PARK BUILDING, April 15, 1903.

Pig Iron.—Conditions in the Pig Iron market have undergone a material change recently, and the result is the supply of Metal is larger than for several months and prices are none too strong. There is now an adequate supply of Coke and the output of the furnaces is again about normal, and with very little buying the tone of the market is weak. None of the furnaces have sold any Iron to speak of for the last six months, and some of the furnacemen seem to be getting a little uneasy as to the future. Prices on Southern Irons seem to be weak, and both Forge and Foundry are being offered at lower prices than were recently announced by the Southern furnace interests. Bessemer Pig for shipment over balance of this year is freely offered at $20, Valley furnace, but buyers are holding off. Premium for prompt Iron are disappearing on account of the supply being more plentiful. Northern Gray Forge is held at about $20.50, Pittsburgh, but this price could be shaded on a firm offer. Southern Forge is being offered below $19.85, Pittsburgh, which is the recently fixed official price. There is little doing in Foundry Iron and prices are weak.

Steel.—The Steel market is quite active, a number of the outside Sheet and Tin Plate mills having recently made good sized purchases, and several of the large Wire interests have also bought heavily. Bessemer Billets are held at about $30 to $30.50, makers' mill, and Open Hearth about $1 higher. Some large contracts for Open Hearth Billets have recently been made on a sliding scale basis. Sheet and Tin Bars are held at $31 to $32, makers' mill.

Sheets.—The market on Sheets is fairly active as regards demand, and prices are firm. The American Sheet Steel Company have advanced prices of Corrugated Painted Roofing to the basis of 2.05c., Pittsburgh, for No. 28 gauge. A general advance in price of Black and Galvanized Sheets about April 20 is looked for by the trade.

(By Mail.)

The Iron market remains somewhat quiet, but prices are firm with the exception of Pig Iron, on which sellers are more disposed to shade prices to effect sales. This is a natural result of the recent lowering of prices on Southern Foundry and Forge Iron, but we think that too much importance has been attached to this action of the Southern furnace owners, as it is a fact that concessions in prices of Southern Irons were being made for some time before the public announcement of lower prices was made. It is true that we are making Pig Iron in this country at a tremendous rate at the present time, and it will take an enormous consumption to get away iwth it, but at the same time it is well to remember that the needs of the country are steadily growing and the last report of unsold stocks of Pig Iron showed less than one day's unsold supply in the hands of the furnaces. It is also true that a number of furnace stacks have been kept in blast longer than they should be, and once the market quiets down a number of these stacks will go out for needed repairs. The output of Pig Iron in this country this year will probably exceed 18,000,000 tons, and from present indications the country will be able to consume this enormous amount. The high prices of labor, and which may be still higher before long, also of Coke and Ore and Limestone, really prohibit very much of a decline in prices of Pig Iron, and while prices may sag off to some extent no serious slump is anticipated. Demand for Steel continues in excess of supply and prices are very strong, prompt Bessemer Billets bringing about $30, Pittsburgh, and Open Hearth about $1 higher. The leading interest is short of Steel and it is said was recently inquiring for a round lot in the open market. No foreign Steel is coming into the Pittsburgh district, prices on the other side having advanced to such a point that it cannot be laid down here in competition with domestic. The independent Sheet and Tin Plate mills are still at work on their project of consolidation, and also the securing of a regular supply of Steel, and it is said that there are good prospects of their plans being successfully consummated. Some definite announcement of these plans may be expected within a short time. In Finished Iron and Steel the whole market is strong, and demand is good, being particularly heavy on Tin Plate, Pipe, Plates, Structural Steel and Wire products. The Shafting Association and also the Steel Bar Association met last week and reaffirmed old prices. The annual convention of the Amalgamated Association is now in session at Columbus, Ohio, but no trouble is anticipated this year in arranging the wage scales of this organization. No increase in present scale rates will be asked, but some important changes in the foot notes will be made. It is probable that the Sheet and Tin Plate mills may ask at conference that limit of output in union mills be increased.

Iron and Steel Bars.—The Steel Bar Association met in this city last week but made no change in prices. Reports showed that tonnage in Steel Bars this year, especially from the Implement trade, was not as large as usual, but the mills are comfortably filled with work. Several of the Implement makers have recently increased their own output of Bars very considerably and this takes just that much out of the open market. There is moderate activity in both Iron and Steel Bars, but the large interests are moving cautiously in the matter of placing large contracts. Prices are firm but without change. We quote Iron Bars at 1.85c. to 1.90c., Pittsburgh, in carload lots and 1.95c. in small lots, half extras, as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra, the total weight of a size to determine the extra regardless of length.

Steel Rails.—Only small orders for Steam Rails from railroads are being placed, the large roads having covered their requirements, but, as noted before, the suburban traction lines are using a large tonnage. We quote at $28, at mill, for Standard Sections in 500-ton lots and over.

Muck Bar.—There is a fair demand for Muck Bar and we quote at $35.50 to $36, Pittsburgh, for domestic makes. We note a sale of 1500 tons at the lower price.

Plates.—At the meeting of the Plate Manufacturers' Association held recently it developed that the Eastern mills were selling more on a parity with official prices than for some time. However, owing to the continued heavy demand, prompt Plates command from $3 to $5 a ton premium, but the bulk of the orders are taken at regular prices. A very heavy tonnage of Plates will be used in the vast improvements to be made and in the new works to be built by the Steel Corporation. The Plate mills are very comfortably filled up for the next four to six months. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

Spelter.—There is a fair demand, and Spelter for prompt shipment continues scarce. We quote Prime Western grades at 5.48½c., Pittsburgh, for futures, and 5.53½c. for spot shipment.

Structural Material.—There is some prospect of the strike of the Structural Iron Workers' Union being settled at an early date. Some heavy contracts are being placed, the American Bridge Company having taken upward of 50,000 tons so far this month, the bulk of this being the new work for the United States Steel Corporation, at Lorain, McKeesport and the new Plate mill at Homestead. The Jones & Laughlin Steel Company have the material for a new theater in this city about 2000 tons. The new Phipps office building on Sixth street 4000 to 5000 tons has been taken by the Carnegie Steel Company. Material for a new department store to be built by Henry W. Oliver on Wood street, in this city, will soon be placed. While the threatening attitude of labor is interfering somewhat with building projects the outlook is good. We quote: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.85c.

Spikes.—We note a continued active demand for Spikes, and the mills have a good deal of tonnage booked. Prices are firm, and we quote Boat and Railroad Spikes at $2.25 per keg, f.o.b. Pittsburgh.

Sheets.—A moderate amount of new tonnage in both Black and Galvanized Sheets is being placed, and the tone of the market is firm. We understand that a few of the outside mills have advanced prices on Black Sheets about $2 a ton, and now quote on the basis of 2.75c. for No. 27 and 2.85c. for No. 28. If the present plans of some of the outside mills go through, their position in the Sheet trade will be much stronger, as they will have an assured supply of Steel—a question that is bothering the mills not a little at present. A consolidation of the leading mills may possibly come. While we repeat former quotations on Sheets, we note that a few mills are quoting higher prices. We quote as follows: Nos. 22 and 24, box annealed, one pass through cold rolls, 2.45c.; No. 26, 2.55c.; No. 27, 2.65c., and No. 28, 2.75c. These prices are for carloads and larger lots and are minimum of the market, jobbers charging the usual advances for small lots. Galvanized Sheets are now 75 and 10 off, which is equal to 3.60c. for No. 27 and 3.85c. for No. 28. These prices are for carloads and larger lots, and are f.o.b. at mill.

Hoops and Bands.—A good deal of tonnage is being placed, and the mills are well booked up. We quote: Cotton Ties at 88c. in 5000-bundle lots and over, and 91c. for less quantities, f.o.b. mill. Steel Hoops are 1.90c. for 250-ton lots or over, and 2c. in small lots, full extras. Bessemer Bands are 1.60c. up to No. 12 gauge, and Open Hearth 1.70c., f.o.b. mill, extras as per Steel Card.

Merchant Steel.—The Shafting Manufacturers reaffirmed prices last week on the basis of 42 per cent. off in less than carloads and 47 per cent. off in carloads, delivered in base territory. Demand was reported fair and prices are being held. The market on Merchant Steels is only fairly active, the large trade being slower this year than usual in placing season contracts. Some of the mills could handle a good deal more work if they had it. Prices are only fairly strong and are shaded on good orders. We quote: Tire Steel, 1.80c. to 1.90c.; Open Hearth Steel, ordinary grades, 1.70c. to 1.80c.; Open Hearth Spring, 2.25c. to 2.35c.; Cant Hook Steel, 2.50c.; Plow Slabs, Bessemer, 2.50c.; Plow Slabs, Open Hearth, 3.75c.; Tool Steel, ordinary grades, 6½c. and upward; Cold Rolled Shafting, 42 per cent. off in less than carloads, and 47 per cent. in carloads, delivered in base territory.

Tin Plate.—We note a good demand for Tin Plate and the mills are all busy. Some of the outside mills are booking good sized orders for Tin Plate at from 10c. to 15c. per box advance over the prices of the leading interest. We quote Ordinary Ternes at $3.80 to $4 per box, f.o.b. Pittsburgh.

Skelp.—No large contracts are being placed, but the mills are well filled up for the next several months. We quote Grooved Iron and Steel Skelp at 2c. to 2.05c., and Sheared at 2.05c. to 2.10c., f.o.b. Pittsburgh, or 2 per cent. off for cash in 30 days.

Merchant Pipe.—The Pipe market is active and the mills have all the business they can handle. Prices are firm and in some cases slight premiums are paid for spot shipment. Discounts to consumers in carloads are as follows:

	Merchant Pipe, Steel.		Wrought Iron.		Full weight Steel Pipe.		Full weight Wrought Iron.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜	68	58	65	55	67	57	64	54
½	70	60	67	57	69	59	66	56
¾ to 6	75	65	72	62	74	64	71	61
7 to 12	69	59	66	56	70	60	67	56

Some of the outside mills quote lower prices on Iron Pipe.

Boiler Tubes.—There is a fair volume of business and the market is firm, but without change in prices. We quote to consumers in carloads as follows:

Size.	Steel.	Iron.
1 to 1½ inches inclusive	42½	36½
1¾ to 2½ inches inclusive	55½	35½
2¾ to 5 inches inclusive	61	45½
6 to 13 inches inclusive	55½	35½

Coke.—There is nothing of particular interest to note in the Coke trade. Output is steadily increasing and the supply of cars is uniformly good. Output of the Upper and Lower Connellsville regions last week was nearly 310,000 tons, a considerable increase over the previous week. Strictly Connellsville Furnace Coke on contracts for shipment over last six months is held at $3.75 to $4 a ton at oven, but outside Cokes are offered at lower figures. The supply of Coke in the last half of the year will be larger than in the first half and buyers are disposed to look for lower figures. Seventy-two hour Foundry Coke on contracts is held at $5 a ton at oven for strictly Connellsville. Premiums continue to be paid for spot Coke.

Old Material.—The Scrap market is active and prices on nearly all kinds of Material are firm. Heavy Steel Melting stock is in good demand, and being somewhat scarce, brings from $21.50 to $22 in gross tons. No. 1 Wrought Scrap is $21 to $21.50 in net tons; Steel Rails, short pieces, $21.50 to $22, gross tons; Old Car Wheels, $24 to $24.50 in gross tons; Low Phosphorus Melting Stock is $24.50 to $25 in gross tons.

H. A. Jackson, formerly with the Mahoning Valley Iron Company and lately in the sales and purchasing departments of the Republic Iron & Steel Company, has been appointed manager of the Pittsburgh office of A. M. Crane & Co., Incorporated, 530 Frick Building.

Belgian Iron Market.

BRUSSELS, March 23, 1903.

Although business has become less difficult to put through the situation in the Belgian metallurgical market is far from being animated. The improvement which developed earlier in the year and which cast a ray of hope and confidence into all our great industrial centers has already made room for a less optimistic anticipation of the future. We have therefore apparently not reached the end of the crisis through which our country has been passing, and the Belgian mills vegetate by profiting from the scarcity of material which characterizes the situation in the United States. Thus, for instance, they have forwarded 4000 tons of Steel in February. In order to best show the effect of purchases by the United States in Belgium I submit below statement showing shipments to America in 1901 and 1902:

	1902. Tons.	1901. Tons.
Steel.		
Ingots	589	....
Beams	2,428	277
Rails	22,824	2,348
Bars and Shapes	843	50
Iron.		
Muck Bar	1,500	....
Beams	2,731	185
Bars and Shapes	4,432	310
Forgings	1,185	....
Pig Iron	10,663	....
Cast Scrap	7,000	175
Totals	54,195	3,345

The check in the favorable movement which developed in Belgium in an upward tendency in prices is due to the greater competition of Germany and to the operations of middlemen. The latter, who had covered by contracts made in December last at very low prices, have been able to compete with the mills themselves. They are endeavoring to secure a renewal of their contracts under substantially the same conditions by holding back specifications as much as possible. These tactics, however, are met by the rolling mills, who expect a renewed improvement as soon as spring opens. Even if they so desired they cannot renew old contracts, because of the uncertainty of the markets in raw material. By handling only such orders as are accompanied by specifications the mills check the speculation and place themselves in a position to profit by any advance if it should occur instead of allowing the middlemen to secure the benefits thereof. So far as our home markets are concerned the amount of work has undoubtedly become more abundant. Our shops are well occupied with numerous orders for cars given out by the State, while building in town and in country has also brought out its contingent of work.

So far as Pig Iron is concerned buying has been resumed. At this time rolling mills are placing their orders for the second quarter. Inquiry for Mill Iron and Foundry Iron is good, the prices being 57 to 58 francs at Charleroi, or 50 francs in the Grand Duchy of Luxemburg for Mill Iron, and 63 francs for Thomas Pig.

Steel Blooms are firmly held and Billets have become scarce at 100 francs per 100 kg. The works in German Lorraine which generally furnish this Steel to our rolling mills claim that they have their output taken care of until June 30. The few Belgian Steel works which sell Blooms and Billets have very little free tonnage, on account of the demand from America. Thus out of exports of 550 tons of Ingots and Blooms, during the first two months of the current year, 500 tons went to the United States.

So far as finished products are concerned we note quite a number of bids for Merchant Iron Bars at £5 2s., f.o.b. Antwerp. For Steel Bars the base is £5 4s. The great establishments which roll Beams and Heavy Sections have their order books well filled and refuse all propositions at old prices. Some of them demand an increase of 2 shillings for export, or £4 to £4 10s., f.o.b.

The inquiries from builders in this country are so numerous that it is quite difficult to satisfy their requirements as to deliveries. Thus some buyers must pay an advance of 25 centimes per 100 kg.

In Plates the situation has somewhat improved. For the home market No. 2 Iron Plates are quoted 142.50 francs and Steel Plates, 145 francs. For export Plates of 3½ mm. and upward, assorted specifications, Iron, £5 12s.; Steel, £5 15s. per ton of 1016 kg., f.o.b. Antwerp.

The United States are in this market for important Rail orders, which are being considered by our Steel works in the Liège district. Cockerill has orders to the end of August; Ańgleur is also well supplied. The base price of Rails is £4 12s., f.o.b. Antwerp.

The situation of the Wire industry is unsatisfactory both as to prices and volume of business. Wire Nails have strengthened since the sale has been placed in the hands of the syndicate, particularly since the latter has reached an understanding with the German Wire Nail syndicate. The German syndicate has undertaken to dispose of any excess production in the Belgian market. The Bolt works, Chain manufacturing plants, &c., are working more regularly, but without any profit to speak of.

St. Louis.

CHEMICAL BUILDING, April 15, 1903.—(*By Telegraph.*)

Pig Iron.—The situation in the Iron market is not showing any marked change the past week. Sales for the most part of very moderate proportions have been for immediate delivery. More interest in the market on the buyers' part is observable, and the recent revision in the prices of Southern Irons is evidently tempting negotiations for future requirements. With some large consumers it is said it will be difficult to hold off much longer in placing contracts, as individual supply is tending to a low point. It is, we think, the general feeling that the prices will hold and that the present level will prevail for second half buying. We quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry	$21.75 to $22.00
Southern No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.75 to 21.00
Southern, No. 4 Foundry	20.25 to 20.50
No. 1 Soft	21.75 to 22.00
No. 2 Soft	21.25 to 21.50
Gray Forge	19.75 to 20.00
Southern Car Wheel	28.50 to 28.75
Malleable Bessemer	25.25 to 25.50
Ohio Silvery, 8 per cent. Silicon	32.50 to 33.00
Ohio Strong Softeners, No. 1	.... to ....
Ohio Strong Softeners, No. 2	.... to ....

Bars.—The Bar market has continued very steady, and aggregate tonnage for both Iron and Steel has been quite large. Jobbers report a generally satisfactory demand from all quarters.

Rails and Track Supplies.—Conditions show little change in this department of the market, and although not to any marked extent, demand and inquiry was perhaps a little easier the past week. Prices are firm and quotable as follows from the mills: Iron Bars at 1.85c. to 1.90c., and Steel Bars at 1.82½c. to 1.90c., half extras. Jobbers quote 2.15c., base, in round lots, and 2.25c. in small lots for both Iron and Steel Bars.

Angles and Channels.—Although delivery of supply is fraught with some little difficulty, jobbers are supplying a very good and well sustained demand for Small Angles and Channels. The trade are quoting 2.25c. to 2.40c. from store.

Pig Lead.—Reports coming from the Lead districts very largely show a boom condition, and producing properties have advanced considerably. Consumption is large and offerings are readily marketable. While not showing higher than last quoted, prices are very firm at 4.57½c. for Chemical, and 4.57½c. to 4.60c. for Desilverized.

Spelter.—Spelter fully shares in the prominence of Lead in the market at this time. Stock of Metal is light, and demand is moderately heavy. Sales are being negotiated on a basis of 5.40c.

Coshocton Iron Company.—The Coshocton Iron Company, formerly of Coshocton, Ohio, announce that their new foundry, pattern and machine shops at East Monongahela, Pa., have been completed and are in operation. The company state that they are now better prepared than ever to furnish anything in the pipe ball, bell die or axle box line. They are also prepared to furnish a full line of gray iron castings. J. M. Bossert is secretary and treasurer.

New York.

NEW YORK, April 15, 1903.

Pig Iron.—Buying is now confined to such moderate lots as are needed to piece out, for immediate or early delivery. While prices for foreign Irons are relatively lower, ex-ship, than corresponding American Pig, they do not leave a margin for importers large enough to pay them for taking the risks and for doing the business, and for the present foreign Iron is out of it, so far as small lots for prompt delivery are concerned. It might be possible to do something for large lots, but for these there is no inquiry. We quote, at tidewater, for prompt to early delivery: Northern Iron, No. 1, $22.25 to $22.75; No. 2, $20.75 to $21.25; No. 2 Plain, $20.25 to $20.50. Tennessee and Alabama brands, in New York and vicinity, No. 1, $21.50 to $22; No. 2, $20.50 to $21; No. 3 Foundry, $20 to $20.50.

Steel Rails.—The market has been very quiet. The pressure for Steel is such that there is a possibility that some Rail mill in the Central West may be temporarily switched off to Billets. We continue to quote $28 for Standard Rails at Eastern mill.

Finished Iron and Steel.—As we go to press reports are current that the structural workers' strike has been called off. Business remains fairly active, and some large orders are about to be closed. Among the larger bridges which will soon be placed is one over the Potomac River, and one between Boston and Cambridge. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates are 1.85c. to 2c. for Tank, 1.95c. for Flange, 2.05c. for Marine and 2.25c. to 2.40c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.75c. to 1.90c.

Metal Market.

NEW YORK, April 15, 1903.

Pig Tin.—Owing to the holidays the London market was closed a portion of the week and interest was very low. This condition had its influence here and this market was also extremely quiet. Enough attention was paid to business, however, to hold the market up and, in fact, advance it a few points. The American end of the speculative movement was more active in this respect than the London contingency. While London advanced but 15 shillings, the advance here was from 29.25c. to 29.65c. At the close to-day spot to June was 29.65c. bid and 29.80c. asked. London cabled at the close to-day £135 10s. for spot and £135 12s. 6d. futures. Business on consuming account was extremely quiet throughout the week. The arrivals of Tin so far this month amount to 695 tons. The amount afloat is said to be 5349 tons. The largest of these shipments is the 1500 tons being carried here direct by the steamer "Hindustan," which is due on April 18.

Copper.—Through another arbitrary move of the large Copper producers the quotation has been nominally advanced about ½c. As they are in control of the New York Metal Exchange and as the figures quoted by the exchange as a result of the daily calls did not suit them, they decided that the exchange prices hereafter should not be those made upon the floor at call time, but such as they name. Consequently the Metal Exchange figures now are those which the producers would like to get for their stock. To-day these are 15c. to 15¼c. for Lake and Electrolytic, and 14½c. to 14¾c. for Casting. The London market closed to-day £63 for both spot and futures. Best Selected is quoted £68. During the entire week the actual value of Copper in the open market was, however, unchanged. It is reported that there are some 5,000,000 lbs. of Lake and Casting Copper in second hands, which the holders, who bought it last year are now showing some anxiety to sell, in view of present conditions. It is said that the sellers have named 14½c. as acceptable on the Lake, stipulating that an entire lot of 200,000 pounds be purchased at this figure. Large consumers, it is said, who would ordinarily take such quantities are well supplied with Copper, which they purchased at the same time that the speculative purchases were made. Consequently this Copper is still hanging over the market. We hear of offers of Lake for spot and April delivery at 14.55c., and it is estimated that if purchasers could be secured this figure would be shaded to 14.50c. on round lots. There is a large quantity of Casting awaiting buyers at 14⅜c. Every point of the situation shows that the producers are fighting desperately to maintain the present artificial values, and that consumers have absolutely no faith in the present market. The situation may be termed rather shaky. Exports so far this month amount to 6134 tons, against 8683 tons for the same period last year. There were quite heavy arrivals from Chile this week, about 800 tons coming direct during the last few days and 200 tons of Chile Bars coming by way of Europe. The shipments from Europe are said to be the result of the increased London visible supply shown in the statistics of the second half of last month.

Upon recommendation of the Copper Committee the Board of Managers of the New York Metal Exchange at its meeting on April 9 following amendments to the Copper rules were adopted, to go into force on April 20:

ELECTROLYTIC COPPER.

The call for Electrolytic Copper shall be for Electrolytically Refined Copper only, and as follows:

1. Spot, on which deliveries shall be made in Ingots or Ingot Bars.

2. One month delivery from date, seller's option. Buyer to give specification within 48 hours whether delivery shall be made in Ingots, Ingot Bars, Cakes and or Wire Bars of usual sizes.

3. The months in their order, except the current month, which shall not be called.

On contracts for future delivery deliveries shall be made in Ingots, Ingot Bars, Cakes, and or Wire Bars of usual sizes, buyer's option. Buyers to give specification 20 days before the earliest date of delivery, if so required, or at least 20 days before the latest date of delivery. Sellers shall have the right to deliver Ingots or Ingot Bars, if no specification is forthcoming when demanded.

Future deliveries shall be made in store, or f.o.b. New York lighterage limits, buyer's option. Buyer to express his option as to "store" or "lighterage free" delivery at the time when specification is given.

All brands of Lake and Electrolytic Copper, deliverable on contracts for Standard Copper, shall also be a good delivery on contracts for Casting Copper, but such Copper shall be in Ingots.

On deliveries of Ingot Copper in Casks, on contracts for Lake, Electrolytic and Casting Copper, a charge for casks shall be made at the rate of $1 each, for casks containing 1250 lbs. each.

Pig Lead.—There is no change here, and little change in London. The official quotation here is 4.65c. for 15 days' delivery and 4.67c. for spot. London cables £12 15s.

Spelter.—The market has been quiet and steady at 5.70c. for spot and 5.60c. shipments. St. Louis is unchanged at 5.40c., and London is firm and unchanged at £22 10s.

Antimony.—Cookson's is quoted 8.25c. to 8.50c.; Hallett's, 7c., and other brands, 6.75c.

Nickel.—No change is noted. Large quantities down to ton lots are now quoted at 40c. to 47c. per lb., according to size and terms of order. Smaller lots are quoted as high as 60c., according to quantity.

Quicksilver—Has advanced to $47.50 per flask of 76½ lbs. in lots of 50 flasks or more. London is unchanged at £8 12s. 6d.

Tin Plate.—There is no change. Business is fair. The price of the American Tin Plate Company is based on $3.80 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, and $3.99 New York delivery.

The British Columbia Meeting Abandoned.—The secretary of the American Institute of Mining Engineers announces that the meeting arranged for July next in British Columbia, with an excursion to Alaska, has been suddenly rendered impracticable by the withdrawal on the part of Canadian and American railroads of assurances previously given as to cars for the proposed trip. The Pullman Company had been able to assure the institute of ample cars for one way, but could not provide the equipment for the return journey. The reason for this step is the unprecedented demand for cars for the regular traffic. Applications and negotiations in every possible quarter have resulted in the conviction that it is impossible to secure even one special train for the journey to British Columbia and back.

A patent has been issued to Fred. H. Daniels, chief engineer of the American Steel & Wire Company, and S. T. & C. H. Wellman, the two latter as assignors to the Wellman-Seaver-Morgan Engineering Company of Cleveland, Ohio, for a continuous ingot heating furnace. The ingots are placed cold in one end of the furnace and are taken out heated to the desired temperature at the other end. The principal claim for the new furnace is that ingots in blooming mills are gradually heated, thus avoiding the bad results of sudden exposure of steel to extreme heat which sometimes occur in the soaking pits of blooming mills.

In an article printed in our issue of April 9, relating to new process galvanized sheets, made by the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio, these sheets were referred to as the "Wick" process of making these sheets. This was an error, as these sheets are made under what is known as the "New Process."

A Strike Against the Premium Plan.

The strike at the W. P. Davis Machine Company of Rochester, N. Y., involving 125 machinists and other labor employed in the shop, is a strike of the most arbitrary nature imaginable. The machinists demand, among other things, the abolition of a system of pay called the premium plan, which has been in use by the company for over two years. This system gives extra pay to the men who do extra fast work and pays them absolutely in proportion to their ability.

The machinists' committee, led by Mr. Mount, had a conference with Mr. Davis and a committee of the machinery manufacturers of Rochester, who offered to the machinists to submit the matter in dispute in arbitration. This offer was rejected by the union, saying that the only thing they would arbitrate was as to whether or not the company should employ only union men, but the other demands would have to be granted or a strike would ensue.

The objection they raised to the premium plan was that the men working under the plan largely increase their output as well as their pay, a condition which they say is not favorable to organized labor. The machinists' committee admitted that the men in the Davis shops were very well satisfied, that they showed very little interest in the union meetings and did not attend the meetings, and that they had no complaints to make, but that the machinists outside of the Davis shop practically made the demand and voted for it in the lodge. The strike shows that the majority of the Davis men have been practically intimidated into a strike against their own interests and against their own wishes.

The interests of the W. P. Davis Machine Company are being looked after in this matter by the National Metal Trades Association and a local association of manufacturers. The National Association consists of about 250 members, employing approximately 30,000 men. Nearly all of them have had strikes within the last few years on the part of the machinists and have succeeded in resisting just such demands as this. Many in the National Metal Trades Association have established the premium system and men are making as high as $5 and $6 per day in those shops under the plan.

The peculiar feature of the premium plan is that it guarantees that the rates, once established, will never be cut, wherein it differs from piece work. The result of the operation of the premium plan in the shops of the National Metal Trades Association has been most satisfactory.

Strike breakers working for the association are never deserted but are taken care of. The association is building up a body of good workmen of good character, who hold the association's certificate and who are sent to break unjust strikes wherever they occur in the association shops. These men are kept in steady employment by the association and are never out of a job whether there is a strike on or not, the result being that the members of the association have an amount of protection that it would be difficult for the ordinary manufacturer to secure ; and the men working for the association have the guarantee of an organization with a very large defense fund, thorough organization and a spirit of loyalty to each other and to the men who work for them which has never been disputed.

Until the association was formed there seemed to be nothing for the independent workman to do but be blackmailed into peace by joining the union, but now wherever the association is strong the men who are in the union under coercion have dropped out and are working on their own merits and doing well; better, in fact, than any union could do for them, especially if the union tries to cut down their earnings, as well as the production of the employer, as they have tried in the Davis case.

Sharon Foundry Company.—The Sharon Foundry Company, with office and works at Wheatland, Pa., expect to have their foundry and machine shops in operation about May 1. Their machine shop is equipped with the latest improved iron working machinery, consisting of lathes, planers, drill presses, bolt cutters and a 16-inch boring mill. The shop is commanded by three 20-ton and one 5-ton electric traveling cranes. The foundry floor is 275 x 120 feet, equipped with two cupolas, one with capacity to melt 16 tons and the other 24 tons per hour. The pattern house is also equipped with all the latest tools, the size of this building being 50 x 150 feet. The first floor will be used for the making and repairing of patterns and the second floor for storing them.

PERSONAL.

C. H. Zehnder, president of the Alleghany Ore & Iron Company of Virginia, is not connected in any way with the Steel Ores Company. Mr. Zehnder has never acted as a director, never attended a meeting and never owned a share of stock.

E. L. Bruce has been appointed assistant purchasing agent of the Colorado Fuel & Iron Company, with office at Denver, Col.

Gus F. Meehan has been appointed general manager of the Ross-Meehan Foundry Company, Chattanooga, Tenn., to succeed his father, James Meehan, who has retired from business.

F. W. R. Snyder, formerly of Illinois Steel Company and American Bridge Company, has accepted a position as sales agent for the Tidewater Steel Company, Chester, Pa.

OBITUARY.

William Chisholm Stubbs of Cleveland, Ohio, treasurer of the Struthers Furnace Company, died in that city on March 29.

Henry Van Brunt, well known as an architect and designer of the Electricity Building at the Chicago World's Fair, died on April 8 at his home in Milton, Mass. He followed his profession in Boston for 20 years and went to Kansas City in 1887. As an architect he speedily established a high reputation. Much of his early work was done on buildings for Harvard University, and he was also the designer of many public libraries and other public buildings all over the United States.

S. Morgan Smith, president of the S. Morgan Smith Company of York, Pa., manufacturers of water wheels, died on April 12 at Los Angeles, Cal., where he had gone for the benefit of his health. Mr. Smith was 65 years old.

Johan Gustav Wiborgh, the successor of Richard Akerman as professor of metallurgy at the Stockholm School of Mines, died on March 16 at the age of 64.

David Russell, for 30 years general superintendent of the Brooks Locomotive Works, at Dunkirk, N. Y., died April 14, at Fredonia, N. Y., of paralysis.

Trade Publications.

A very handsome pamphlet descriptive of the properties of the Allegheny Ore & Iron Company has been issued. A series of reproductions of photographs shows the Oriskany ores of Wilson's Run, Craig County, Va., which is pronounced the ideal ore for basic pig iron manufacture, the Gem Furnace at Shenandoah, Va., the Victoria Furnace at Goshen, the Allegheny Furnace at Iron Gate, and the Buena Vista at Buena Vista, Va. The company also own Potts Valley ore at Huddleston, Va., the Victoria and Frazer mines near Victoria Furnace, and the Boyer mine at Shenandoah. The president of the company is C. H. Zehnder of Philadelphia, and the general superintendent W. W. Taylor of Clifton Forge, Va. The sales agents are Rogers, Brown & Co.

The Chicago Pneumatic Tool Company, Chicago, have issued Circular No. 35, illustrating new pneumatic long stroke riveting hammers; pneumatic chipping, calking and beading hammers; pneumatic piston air drills, and air compressors. The long stroke riveting hammers are equipped with an automatic safety device, which prevents the accidental shooting out of rivet-set and piston. For the pneumatic chipping, calking and beading hammers the manufacturers claim that from three to six times as much work can be done with their aid as by hand, and in a proportionately shorter time.

Cincinnati Machinery Market.

CINCINNATI, OHIO, April 9, 1903.

A review of the Cincinnati machinery market shows conditions practically the same as for several months past. Expansion seems to be the order of the day, and to this end every effort is being made by the various manufacturers to utilize every available inch of space, and if possible erect additional buildings to take care of the immense volume of trade offered. Orders are being rapidly booked, and barring strikes and other labor troubles, the year of 1903 promises to eclipse its predecessor. The railroads have been laboring for some time to overcome the difficulties that have beset them, and we are now pleased to report that while delays exist still they are not so numerous and are gradually growing less. This will aid very materially in disposing of both the raw material and the manufactured product, and cause a better feeling among the several branches of the industry. The strike among the architectural iron workers has been a cause of considerable uneasiness in local circles, but the opinion now prevails that all will soon be satisfactorily settled. While we note a slight awakening of foreign demand among some of the manufacturers, the general trade is practically lifeless, and from the present outlook bids fair to remain so for some time to come. The action of the railroads in securing terminal facilities in the bottoms has caused some apprehension among the manufacturers located in that district, and until it is clear as to just what amount of ground the railroads will need for their tracks, manufacturing interests will be unsettled as regards further expansion.

Schumacher & Boye are very busy, with conditions favorable for the future. The are expending their surplus energy in pushing forward their new addition, and hope to be in possession of same by July 1. This building, when completed, will largely increase their capacity, and they anticipate large returns as the result of this expansion.

Cincinnati Planer Company are in line with others, and have all the business they can handle to advantage. A very nice quota of orders has been placed on their books, and they have no complaints to make whatever. They have recently added a new pattern shop, which more than doubles their capacity. The attachments are all of the latest design and are motor driven. They are also increasing their general equipment very extensively. They report some delay in receiving patterns as rapidly as desired, but hope the situation within the next few months will be greatly improved in this particular.

Dreses Machine Tool Company say that trade continues good and is steadily on the increase. While the year just past was considered the most remarkable one since the establishment of their company, all indications point to a greater volume of business this year than ever before. They report foreign business as very light, with an occasional shipment for England. They are being hampered by the usual delays of the railroad companies, both in and out, but note an improvement in this regard to what it was some months since.

The Cincinnati Milling Machine Company are doing a large steady business. They are receiving their share of orders and are very hopeful for the future. They report the month of March as the largest in volume of trade since their organization, and that the last four months showed an increase of over 30 per cent. They are now contemplating an addition of several stories to their plant, which will nearly double their present capacity. They note quite an improvement in transportation facilities, and predict that within a short time the railroad companies will make deliveries with their former promptness. They feel confident that foreign trade is on the improvement, and are bending their energies toward securing their proportion of it.

Niles Tool Works of Hamilton, Ohio, believe that trade is at its best and prospects flattering for its continuance. Some months since they endeavored to enlarge their plant, which necessitated the condemning and blocking of a portion of one of the streets. The city authorities at that time refused to allow this to be done, and consequently the proposed expansion has for the present at least been dismissed.

The Long & Allstatter Company of Hamilton, Ohio, manufacturers of punch and shear machinery, are very busy. They will at an early date be forced to provide greater facilities for taking care of their rapidly increasing business, and to this end are planning the erection of a large building to be used for warehouse purposes. They have recently added to their equipment an 84-inch open side Detrick & Harvey planer, and are now arranging for numerous smaller tools. They report some business with England, South America, Mexico, South Africa, the Philippines, California points, Seattle and Birmingham. The tendency is all toward heavier machinery with steel castings and forgings.

The American Tool Works Company report trade better than ever before—February and March being two of the best months ever known. They are largely increasing their capacity by the addition of new tools, both their own make and by purchase. They contemplate in the near future making extensive alterations in the office management of their building, as under existing conditions they are very much crowded. They still have under advisement the change of location of their plant, but as yet have come to no definite conclusion. They are exceedingly gratified with the reception of their new lathe, and although radical changes have been made in this tool, it is becoming very popular, being a rapid worker and a good seller.

The William Powell Company have recently purchased a large number of new machines, and have added a boiler of double capacity, made necessary by the expanding of their plant some months since. They are well satisfied with the business offering in the territory through which they seek trade, and can see no reason why prosperity should not continue.

The J. A. Fay & Egan Company can find no fault with business conditions as they see them. Trade, both foreign and domestic, is of the best, with orders booked for some time to come. They have made no definite plans for location, nor will they do so until the matters pertaining to themselves and the different railroad interests now in controversy are settled.

The Bentel & Margedant Company of Hamilton, Ohio, manufacturers of wood working machinery, are very busy, with orders being booked in goodly numbers. They also wish to add their testimony to the fact that the year of 1902 exceeded all previous ones in the amount of business handled. They will very soon begin the enlarging of their foundry by adding a building 50 x 80 feet for their pulley molding machines and will also increase the size of their machine shop 65 x 185 feet. They report foreign business very moderate, with trade on the increase with Mexico and Canada.

Greaves, Klusman & Co. have recently erected an additional building in connection with their shop, which gives them some 1500 square feet more space. This was made necessary in order to relieve the crowded condition of their shop. They expect to occupy the same about the middle of the month.

The Bullock Electric Company have recently moved into their new building of brick and steel construction, 177 feet wide by 300 feet long. This building is for testing large work and is equipped with 50-ton cranes in center aisle, 75 feet span, and 30-ton cranes in side aisle. It is large enough to take care of a 10,000-kw. generator if needed. One machine worthy of notice is a pit lathe with a 44-foot swing. They anticipate before the close of the present year lengthening this building 300 feet additional. They have now under construction one 5000 horse-power A. C. and one 5000 horse-power D. C. machines for the Cincinnati Gas & Electric Company; also have under way 12 2000 to 3500 horse-power, five of them for the Pittsburgh Reduction Company at Massena, New York, and a number to be sent to the Pacific Coast for long distance work.

The Hamilton Corliss Engine Works will about May 1 move into their new machine shop, which is 317 feet wide by 400 feet long and 60 feet to the eaves. This building is especially well ventilated and lighted, having three rows of windows the entire length. There will be three traveling cranes of 50 tons each with a 72-foot span and 10 smaller ones, all motor driven. All new machinery will be installed and the capacity over the old shop be increased fully threefold. The office portion will occupy the end of the building at the corner of Fourth and Heaton streets, and will be four stories high, equipped with all the modern conveniences. They now have a belt line through their yard connecting the C. H. & D. and Pennsylvania railroads, which will add very greatly to their convenience in shipping. Their new foundry building of brick construction, 110 feet wide and 408 feet long, is now being utilized for furnishing all the castings they require.

The I. & E. Greenwald Company, makers of engines and gears, are as busy as they can be with orders placed far ahead. They will within the next few weeks occupy their new addition, thereby enabling them to largely increase their output. Trade is especially heavy at present, orders coming in from all sections of the country. They recently shipped to the Northern Irrigation Company of Texas one of their large machines, to be used in irrigating the rice lands of that State. Trade in coal washing machinery is also good, and they have recently secured several large contracts for this class of machinery. They are expending a large amount of money in new tools and equipment, and expect in the near future to be able to meet any demand that may be made upon them.

The Black & Clawson Company of Hamilton, Ohio, one of the largest paper mill machinery industries in America, was, as announced in *The Iron Age* some weeks since, sold to a syndicate of Cincinnati men. On March 1 the firm name was changed to the Black-Clawson Company, and reorganized with Bradford Shinkle, president; F. W. Whittaker, vice-president; L. P. Hurm, second vice-president, and F. C. Trowbridge, secretary and treasurer. The other directors are C. A. Hinsch, Cincinnati, and O. M. Bake and H. L. Kutter of Hamilton, Ohio. The capital stock is $1,000,000, of which $400,000 is preferred and $600,000 common. They are doing a remarkably fine business, and report the year of 1902 the largest they have ever had. They expect soon to expand their foundry by the erection of a building, 60 x 220 feet, which they anticipate will increase their output fully

100 per cent. They have on their books large orders for Japan, Finland, Russia and other foreign countries.

The L. Schreiber & Sons Company, architectural iron workers, are exceedingly well pleased with the aspect of trade and are doing their utmost to fill orders within the required time. Last year was one of the largest they have experienced, and if the three months just past are any criterion, 1903 will greatly exceed it in volume. They are having great demands made upon them from various Southern cities where they have secured many valuable contracts. They are now working on the new building being erected by the Chattanooga Brewing Company, the National Home for Disabled Volunteers of Johnson City, Tennessee, the ornamental work for the St. Charles Hotel at New Orleans, the ornamental work for the Germania Bank, Savannah, Ga., and have recently completed the iron work on the public library building at Lexington, Ky.

The American Laundry Machine Company are now at home in their new plant, which is situated on a spur track of the B. & O., S. W. R. R., near Norwood, Ohio. The main building is 30 x 90 x 225 feet, "L" shaped, two stories in hight. The western portion of the building contains the office, display and drafting departments, while the northern part is used for machine shop purposes. The power, heating and wood working plants are each in a separate building and are nicely arranged. The machine shop is well equipped with all necessary cranes and other labor saving machinery. Just at present they report new business a little slow, and they are now endeavoring to catch up with orders booked some time previous.

The J. M. Robinson Company are very much gratified with trade as they find it. Their books are well filled with orders and everything points to a satisfactory year. With them foreign trade is absolutely nothing, all of their orders coming from domestic sources and well distributed. They have recently added to their equipment a heavy hoisting machine for the handling of large castings, which greatly facilitates their movements. They have within the last month secured an order for a large toggle press, weighing 30,000 pounds, 12 feet in length, for a Columbus, Ohio, firm. They also shipped to a St. Louis concern a 10-foot bending machine weighing 38,000 pounds.

The John H. McGowan Company report business exceptionally brisk, with a general demand for their products from all sections of the country. Particularly is this true of the Southern States, where new business enterprises are being launched and new fields of industry developed, thereby offering new markets for their output. They have recently shipped some very heavy pumping machinery to various municipalities throughout the State of Ohio, and are now estimating on other plants soon to be erected. The president of the company, John H. McGowan, who for the past year has been abroad, sailed from Naples for home March 31.

The New York Machinery Market.

NEW YORK, April 15, 1903.

Of all matters absorbing the attention of machinery builders and manufacturers generally, there is none of as potent interest at present as the labor question. This topic, of course, is always an important one with manufacturers, but at this time the situation has assumed such shape that machinery makers are thoroughly stirred up. Machinery merchants apprehending the existing conditions are also doing a good deal of talking. As a result, purchasers are beginning to see the advisability of hastening their plans as much as possible and making their purchases without delay. Such concerns are taking no chances on what may happen in the labor situation.

The trade has been directly affected but little thus far as a result of labor disturbance. Some anxiety as to what proportions the present union agitation will assume within the next month or so is shown, however. The greatest trouble is now being caused by the boiler makers. Some of the shops producing small tubular boilers, such as are used on hoisting engines, are shut down or crippled, and this is causing serious delays in the delivery of hoisters. The hoisting engine trade has been very brisk of late, and three months' delivery has not been considered unreasonable. Now the makers are unable to stipulate any date of delivery, making their promises entirely contingent upon the service of the boiler makers.

In the tall buildings now under construction, where the structural steel workers are hampering the work, boiler manufacturers are experiencing some trouble in installing the boilers. The latest notion of the unions is that organized structural steel workers should erect the boilers in these buildings. Naturally, the boiler men, who have always had their own men do this work, are protesting with the result in some cases that all the work on the entire building is stopped by the unions.

Outrageous demands of this stripe have incensed employers generally throughout the country, and in the organization of employers things are actually being accomplished. A great deal of interest in the doings of the National Metal Trades Association is being shown by machinery builders, and at the moment eyes are turned toward the convention of the National Association of Manufacturers, which is now in session at New Orleans.

In certain quarters the opinion finds expression that this movement, which is bringing employers together, and which promises to result in a national organization covering all fields of industry throughout this country, has gathered such strength that the unions will hesitate and do a good deal of thinking before attempting any widespread rupture. On the other hand it is thought that this summer the unions may corral their forces for a grand *coup*. At any rate, employers are unanimous in the belief that unionism has exceeded all bounds of reason, and are now banding themselves together and taking a hand in correcting the evils which result in their trying to run their own shops.

The flurry in Wall street on Monday when prices of some issues fell considerably was the occasion for comment in the trade. No adverse effect upon business as a result of this is expected in the machinery market. The occurrence was simply held up as a pointed illustration of the discrepancies of conditions which can exist in the stock market and in general business at the same time. It was cited as an instance of proof that the values of securities can be manipulated entirely independent of actual conditions. The machinery trade do not believe that the business situation of the country is reflected or foretold by the ticker tape. One deduction of interest that was made is that money will become somewhat easier, and that thus new enterprises will be encouraged. Several machinery merchants who follow the markets closely presented the argument that the comparatively soft condition of railroad and prominent securities indicated that money is finding better investment in private business enterprises, and consequently is being withdrawn from stock issues.

In the machine tool trade the only really large proposition decided upon during the week was the list of the Chicago, Rock Island & Pacific Railroad. The list included considerably more than $100,000 worth of machinery intended for the new shops at Moline, Ill. The Niles-Bement-Pond Company, Manning, Maxwell & Moore and the Marshall & Huschardt Machinery Company were awarded the largest slices of the work. The orders were, however, scattered among several other concerns as well.

That the Ingersoll-Sergeant Drill Company are getting closer to the machine tool portion of their new works at Phillipsburg, N. J., is evidenced by the fact that orders for electrical equipment are being placed now. The specifications for the motors show that the tools will be direct driven electrically to a large extent. We are informed that Dodge & Day, modernizing engineers of Nicetown, Phila., are laying out the machinery equipment for the new shops. The specifications for the requisite machinery are now being compiled by the above concern.

A fair sized lot of machinery is included in the list issued by the Bureau of Supplies and Accounts for installation in building No. 4, Naval Station, New Orleans. The bids will be opened on May 12. The list includes: One 36-inch engine lathe, one 20-inch engine lathe, one 16-inch engine lathe, one 12-inch engine lathe, one turrent lathe, one open air planer, one open side planer, one universal radial drill, one drill press, 36-inch; one drill press, 24-inch; three sensitive drills, one universal milling machine, one plain milling machine, one shaper, 24-inch; one shaper, 16-inch; one boring mill, one horizontal boring machine, one slotter, two bolt cutters, one power hack saw, one pipe threading machine, 8-inch; two pipe threading machines, 2-inch; one universal tool grinder, one twist drill grinder, one emery wheel grinder, double wet; one grindstone, one centering machine, two line shafts and motor, one traveling machine, 5-ton; 120 feet work benches, 12 bench vises, one elevator, one plate planer, one double punch and shear, 42-inch; one double punch and shear, 36-inch; one horizontal punch and bending machine, one radial countersink, one double angle shear, one set horizontal plate bending rolls, one planer and matcher, one double circular saw, one variety wood worker, one planing machine, one band saw, one vertical hollow chisel mortising and boring machine, one tenoning machine, one single spindle, shaper or molder, one lathe, pattern maker's, 24-inch; one lathe, pattern maker's, 18-inch; one carving machine, one grindstone, one knife grinder, one motor for lathes, one dust collecting system, one cupola, one oil burning brass furnace, one blower, one portable core oven, one jib crane, one elevator for cupola, one rivet machine, one furnace for rivet machine, one anvil, one emery grinder, one iron stack, one power wiring machine, one electric lighting wiring system.

New Castle Forge & Bolt Company of New Castle, Pa., who on January 1 increased their capital stock from $75,000 to $300,000, have let contracts for large additions to their plant. These will consist of an extension to the present building of 112 feet long by 60 feet in width, together with machine shop 30 x 80. They are also erecting a new steel and brick building which will parallel the old building, dimensions of which will be 80 x 342 feet. There will be a space of 40 feet between the two buildings which will be covered and used as yard for stock and in which will be operated a 15-

ton crane for unloading and handling raw material. A contract was closed with the American Furnace Company for installing a number of generating and recuperating furnaces of the Swindell patent, and it is expected to have these different departments in operation by July. When completed this will be one of the most modernly equipped plants in the country for the manufacture of bolts, rivets, car, drop and general forgings, chain, &c.

The Black Diamond Automobile Company, a New York Corporation capitalized at $500,000, are planning a factory to be built at Geneva, N. Y., by the Geneva Chamber of Commerce and citizens of Geneva. The officers and directors are business men of Geneva and Brooklyn. The plant will be operated by electric power, which will be furnished by the local electric company. Machinery and tools have not been purchased yet, and the company are now ready to hear from parties selling tools and machinery in this line. The plant will produce automobiles of all lines and a motor that is said to be a new departure which has great advantages over motors now in use. Charles E. Turner is general manager of the company, with offices at 1028-1030 Gates avenue, Borough of Brooklyn, New York City.

The Hempfield Foundry Company of Greensburg, Pa., have purchased a fair sized machinery equipment for a new car wheel plant. They are still in the market for a boring mill for boring out small car wheels. H. C. Burket is the company's purchasing agent.

Builders of pumping machinery and other accessories who have been keeping an eye on the large floating dry dock to be stationed at Cavite, Philippine Islands, by the Navy Department, are now turning their attention to the Maryland Steel Company of Sparrow's Point, Md., who were awarded the contract for the dock at $1,124,000.

The Kenton Iron & Steel Company of Covington, Ky., are erecting a new plant at Covington for producing merchant bars, sheets and shapes of iron and steel from No. 14 gauge down, with horseshoe iron as a specialty. They propose erecting a plant on lines somewhat original and fully protected by patents. Its capacity at the start will be 40 tons per day. They are in the market for a 400 horse-power engine, three waste heat boilers of 150 horse-power each, one squeezer of 50-inch or more, one muck mill two-high complete or in part, one small mill complete or in part, a lot of furnace plates; and, in fact, anything in construction of a rolling mill; the same may be second hand if up to date and in good repair. The officers of the company include Chas. Vokes, president, and Jas. W. Arnold, vice-president and manager.

The Alberger Condenser Company of 95 Liberty street have just received an important contract for their high vacuum condenser system. It was awarded by the British Westinghouse Company of Manchester, England, and is to be installed in connection with the large steam turbine plant in the Neasden Station of the Metropolitan District Railways. It will be recalled that the British Westinghouse Company were recently awarded a contract for the equipment of this station. They will install three 3500-kw. Westinghouse steam turbines of the Parsons type.

An illustration of the failure of a steam turbine is afforded at the plant of the Saxony Worsted Mills, Woonsocket, R. I. The machine that failed will be replaced by a 600 horse-power Brown-Corliss cross compound condensing engine sold by Woolston & Brew of 39-41 Cortlandt street. This concern also sold four 400 horse-power Brown-Corliss heavy duty engines to be installed at the Berlin Mills, Berlin, N. H.

Gould & Eberhardt of Newark, N. J., are about to install an isolated electric power plant and are now looking into the subject of high speed engines.

The Boston & Great Falls Electric Company of Great Falls, Mont., have purchased and are now installing one 360-kw. revolving field two-phase alternator of 2200 volts, Westinghouse; one 675 horse-power Victor turbine of the Stilwell-Bierce & Smith-Vaile Company's make. W. D. Dickinson is the manager of the company.

The Standard Steam Specialty Company, manufacturers of the Utility exhaust ruffler, oil separator, return tank, pump governor and feed water heater and other steam specialties, have recently taken contracts for 20,000 horse-power of their apparatus. To facilitate manufacturing and be in a position to carry in stock standard sizes of Utility oil separators, from 30 to 10,000 horse-power, they have leased the premises, 542 and 544 West Broadway, New York, from May 1, which will give them 10,000 square feet of floor space.

Buffalo Forge Company.—The Buffalo Forge Company of Buffalo, N. Y., manufacturers of engines for electric and high grade work, mechanical draft apparatus, fan system heating, ventilating and drying, Buffalo down draft forges, blowers, exhausters and fans of all types for every duty, have removed their Pittsburgh offices from Room 516 Fitzsimmons Building to Room 607 House Building, Smithfield and Water streets, Pittsburgh, Pa. The new offices afford the large increase in space demanded by the steady growth of the business of this concern in the Pittsburgh district. As heretofore, the Pittsburgh district sales will be in charge of H. D. Wilson.

The Philippine Trade in Iron and Metals.

WASHINGTON, D. C., March 14, 1903.—The Bureau of Insular Affairs of the War Department has compiled the returns received from the various ports of the Philippines, showing the imports and exports of manufactures of metal for the calendar year 1902 as compared with 1901. The figures as presented show a decrease from $3,690,577 to $3,053,130, or a loss of more than $600,000. In the arbitrary classification adopted by the bureau, lead, zinc, copper, brass and other metals are included with iron and steel, and the category also embraces cars, vehicles, boats of all kinds, &c., and therefore only a fraction of the decrease shown by the figures representing the importations in this entire group should be charged against iron and steel.

The decreased importations of all materials which, like iron and steel, enter largely into building as well as manufacturing, are attributed by the experts of the Department chiefly to two causes: First, lack of an adequate supply of labor, and, second, the unstable condition of the currency, which has deterred importers, merchants and manufacturers from engaging in large enterprises until a fixed standard should be adopted. The question of obtaining a sufficient supply of reliable labor for the present and future industrial needs of the islands is one of special prominence, the proper settlement of which seems to be vital to the welfare of the islands, and in a memorandum which will accompany the annual statistics when published it is said:

"The contention on the part of those commercial interests familiar with the situation, that the net supply as a whole is insufficient under the most favorable circumstances, seems to be well founded and the question is undoubtedly a perplexing one. The merchants and business men of Manila appear to be largely favorable to the importation of Chinese laborers for a limited period, and under such restrictions as will prevent their pursuing any other occupation than that of ordinary unskilled labor and that the archipelago in order to take rank from an industrial standpoint should develop reliable and low priced labor in abundance."

It is believed that if Chinese can be imported to aid in the agricultural development of the islands, the Filipinos can speedily be trained in the simpler hand trades and made very useful. Present conditions are largely due to the fact that for many years before American rule the working classes had been poorly and irregularly paid, while the transactions since that time involving the employment of labor have brought about such marked changes that the average per diem earnings have exceeded the highest price paid in any part of the Orient for performing the same class of work. This inducement of high wages, compulsory, it is said, owing to the demand for great numbers of laborers, has had a tendency to unsettle the already limited market of the islands, and no little difficulty is experienced in obtaining a sufficient force of natives to engage in any steady employment.

The situation with regard to the currency is expected to be speedily remedied, as the result of legislation enacted by the last Congress. The continued decline in silver and the resulting fluctuations in the Mexican dollar have caused a direct loss to the insular treasury of more than $1,000,000 gold during the past year, and the situation has been full of danger to all commercial interests.

The imports of iron and steel for the calendar year 1902, while showing a decrease, will not be discouraging to American exporters, for the United States has suffered less than any other country in this decline. Great Britain and Germany, the principal rivals of this country in the Philippine market, have met heavy losses, and in a number of instances American manufacturers have been the direct beneficiaries thereof. In the cruder forms of iron and steel American exporters have made very little headway, evidently for two reasons: First, because no special

superiority for the American product over the European can be claimed. and, second, because American manufacturers of these products are unable to fill domestic orders and are paying little or no attention to this branch of the export trade. The following figures show the imports of the cruder products of iron and steel for the calendar years 1901 and 1902, including the share of the United States and our European competitor:

Pig iron, 1901, $10,198; United States, none; United Kingdom, $8767; 1902, $110,833; United States, $2032; United Kingdom, $8739. Bar iron, 1901, $64,922; United States, $4666; United Kingdom, $46,485; 1902, $70,409; United States, $497; United Kingdom, $41,367. Bars and rods, 1901, $26,911; United States, $3843; United Kingdom, $18,130; 1902, $41,203; United States, $8578; United Kingdom, $28,318. Hoops, bands and scroll, 1901, $1511; United States, $78; United Kingdom, $1375; 1902, $502; United States, none; United Kingdom, $417. Iron rails, 1901, $21,805; United States, none; United Kingdom, $3508; 1902, $12,341; United States, $350; United Kingdom, $6648. Steel rails, 1901, $4038; United States, none; United Kingdom, $2393; 1902, $1896; United States, none; United Kingdom, $1329. Iron sheets and plates, 1901, $195,069; United States, $1446; United Kingdom, $191,804; 1902, $195,167; United States, $4132; United Kingdom, $183,951. Steel sheets and plates, 1901, $40,401; United States, $15,526; United Kingdom, $18,087; 1902, $28,974; United States, $723; United Kingdom, $22,512. Structural iron and steel, 1901, $37,877; United States, $4; United Kingdom, $31,089; 1902, $35,454; United States, $189; United Kingdom, $24,864.

In the more highly manufactured products the share of the United States is constantly increasing, and especially in the items of wire, builders' hardware, tools, &c., as will be seen by the following figures: Wire and wire cables. 1901, $9694; United States, $436; United Kingdom, $4945; 1902, $21,844; United States, $8069; United Kingdom, $6046. Builders' Hardware, 1901, $29,147; United States, $2062; Germany, $10,723; 1902, $47,033; United States, $10,080; Germany, $22,040. Saws, 1901, $3050; United States, $1379; Germany, $828; 1902, $8104; United States, $3124; Germany, $3064. Tools, 1901, $80,309; United States, $21,057; Germany, $24,601; 1902, $109,072; United States, $31,432; Germany, $36,434. Car wheels, 1901, $131; United States, $56; Germany, $65; 1902, $110; United States, none; Germany, $89. Castings, 1901, $38,596; United States, $5835; United Kingdom, $16,369; 1902, $23,566; United States, $2145; United Kingdom, $9959. Table cutlery, 1901, $13,493; United States, $242; Germany, $7966; 1902, $12,917; United States, $120; Germany, $9348. Other cutlery, 1901, $71,142; United States, $8547; Germany, $44,931; 1902, $55,150; United States, $4046; Germany, $39,065. Firearms, 1901, $1883; United States, $262; Germany, $1102; 1902, $5783; United States, $1127; Germany, $2579. Cut nails and spikes, 1901, $6155; United States, $1606; United Kingdom, $1446; 1902, $4369; United States, none; United Kingdom, $2521. Wire nails, 1901, $23,719; United States, $5724; Germany, $6159; 1902, $42,032; United States, $11,064; Germany, $11,958. Other nails and tacks, 1901, $14,023; United States, $555; United Kingdom, $5747; 1902, $13,910; United States, $2175; United Kingdom, $6336. Pipe and fittings, 1901, $32,233; United States, $23,730; United Kingdom, $8298; 1902, $38 838; United States, $21,890; United Kingdom, $12,554.

In the machinery schedule the United States makes some notable gains, while Germany and the United Kingdom show losses, but some unexpected decreases are noted in imports from the United States of electrical machinery, sewing machines, and in boilers and parts of engines, the United Kingdom gaining on the last mentioned items. The details of these importations are as follows: Cash registers, 1901, $933; United States, $933; United Kingdom, none; 1902, $6262; United States, $6127; United Kingdom, $75. Electrical machinery, 1901, $22,560; United States, $19,318; Germany, $2730; 1902, $3530; United States, $2116; Germany, $1025. Laundry machinery, 1901, $3610; United States, $343; Germany, $2320; 1902, $5064; United States, $4604; Germany, $266. Metal working machinery, 1901, $3402; United States, $275; United Kingdom, $1505; 1902, $894; United States, $260; United Kingdom, $393. Printing presses, 1901, $15,879; United States, $2678; Germany, $7014; 1902, $29,920; United States, $27,735; Germany, $1373. Shoe machinery, 1901, none; 1902, $30; United States, $30. Locomotives, 1901, none; 1902, $4078; United States, none; United Kingdom, $3455. Stationary engines, 1901, $9930; United States, $6427; United Kingdom, $1305; 1902, $21,259; United States, $9123; United Kingdom, $6027. Boilers and parts of engines, 1901, $88,643; United States, $30,594; United Kingdom, $37,993; 1902, $70,722; United States, $11,405; United Kingdom, $46,874. Apparatus, 1901, $26,481; United States, $25,133; United Kingdom, $370; 1902, $26,953; United States, $25,963; United Kingdom, $65. Sugar and brandy machinery, 1901, $229; United States, none; United Kingdom, $118; 1902, $1330; United States, $236; United Kingdom, $1094. Other machinery and apparatus, 1901, $131,274; United States, $47,473; United Kingdom, $23,675; 1902, $237,273; United States, $116,108; United Kingdom, $59,036. Detached parts of machinery, 1901, $49,806; United States, $20,838; United Kingdom, $20,227; 1902, $95,539; United States, $26,048; United Kingdom, $41,722. Safes, 1901, $15,357; United States, $5192; United Kingdom, $3339; 1902, $28,626; United States, $15,448; United Kingdom, $7645. Scales and balances, 1901, $8928; United States, $6502; United Kingdom, $1707; 1902, $12,879; United States, $10,993; United Kingdom, $314. Stoves and ranges, 1901, $4666; United States, $2042; United Kingdom, $448; 1902, $7488; United States, $3454; United Kingdom, $1621. All other manufactures of iron and steel, 1901, $681,941; United States, $108,808; United Kingdom, $203,071; 1902, $471,465; United States, $90,292; United Kingdom, $197,920.

W. L. C.

Fluctuation in Iron Stocks.

The following table shows the extent of transactions and the fluctuations in quotations of the stocks of iron and steel companies in the month of March, with the dates on which the highest and lowest prices on each stock were realized:

Cap'l Issued.		Sales.	Low-Date est. Mar.		High-Date est. Mar.	
$17,701,500	Am. Bicycle Co., com.	1,000	⅛	2	⅛	2
9,294,900	Am. Bicycle Co., pref.	1,000	1	4	1	4
41,233,300	Am. Can, com.	6,670	7¼	13	9	18
41,233,300	Am. Can, pref.	9,600	40⅛	12	47	17
29,000,000	Am. Car & F'dry, com.	26,800	38	9	41	20
29,000,000	Am. Car & F'dry, pref.	5,500	89¾	11	92¼	4
24,100,000	Am. Loco. com.	29,700	27¼	26	29⅜	3
25,000,000	Am. Loco., pref.	7,150	23¼	9	95⅜	30
45,000,000	Cambria Steel.	20,000	23⅜	10	25¼	18
7,000,000	Cent. Foundry, com.	3,175	2½	9	4	20
7,000,000	Cent. Foundry, pref.	510	14	11	16⅝	20
17,000,000	Col. Fuel & Iron.	27,100	63¼	7	73¹/₁₆	2
25,000,000	Crucible Steel, com.	27,150	18¼	31	20⅜	19
25,000,000	Crucible Steel, pref.	7,575	83¼	31	86¼	2
1,975,000	Diamond State Steel.	250	¼	30	⅝	11
2,368,100	Empire I. & S., com.	....	10	25	15	2
2,281,400	Empire I. & S., pref.	....	40	26	46	2
15,000,000	Inter. Pump, com.	2,000	39	6	45	27
8,850,000	Inter. Pump, pref.	....	83	3	83	3
8,396,000	Nat. Enamel., com.	....	34¼	10	36¾	2
15,441,800	Nat. Enamel., pref.	....	90	3	93	2
4,449,800	Otis Elevator, com.	2,300	41	31	49⅛	4
6,350,000	Otis Elevator, pref.	925	90	27	98½	4
10,750,000	Pa., new, com., Phila.	250	50	27	50	27
16,500,000	Pa., new, pref., Phila.	1,000	91½	9	94	28
12,500,000	Pressed Steel, com.	13,900	60	10	62½	4
12,500,000	Pressed Steel, pref.	3,600	92	11	94¼	3
10,000,000	Railway Spr., com.	6,400	33	24	35⅛	2
10,000,000	Railway Spr., pref.	1,700	86½	31	89	7
27,191,000	Repub. I. & S., com.	35,350	19¼	9	21⅝	7
20,306,900	Repub. I. & S., pref.	8,200	76⅛	30	79⅞	12
7,500,000	Sloss-Shef. I. & S., com.	14,250	53	31	69	4
6,700,000	Sloss-Shef. I. & S., pref.	400	93¾	27	96	17
20,000,000	Tenn. Coal & Iron.	137,800	61¼	10	68⅝	23
1,500,000	Tidewater Steel.	3,050	3⅞	24	4¼	10
12,106,000	U. S. C. Pipe, com.	1,000	12½	25	13¾	11
12,106,000	U. S. C. Pipe, pref.	2,000	50⅜	28	53¼	11
510,361,300	U. S. Steel Co., com.	323,775	35¼	31	38¾	2
508,511,200	U. S. Steel Co., pref.	214,750	85⅜	9	87⅞	2
8,425,000	Vir. I. & C., com.	2,300	35¾	30	39	5
1,500,000	Warwick I. & S.	1,550	5	27	5½	24
	Allis-Chalmers, com.	1,500	18	31	20½	5
	Am. Steel F'dries, com.	2,500	15	31	17¼	3
	Am. Steel F'dries, pref.	1,000	50	10	63½	4

Dr. R. W. Raymond, secretary of the American Institute of Mining Engineers, has returned from abroad after an absence of about four months.

HARDWARE.

THE extraordinary increase in the volume of manufactured products which is characteristic of the present era of unparalleled commercial and industrial activity is accompanied by a general narrowing of margins of profit. It is, indeed, a recognized principle that instead of seeking a large percentage of profit on comparatively limited transactions the manufacturer whose methods are representative of the prevailing spirit will be content to sell his product at a very moderate advance beyond the cost, endeavoring to make up in a greatly increased volume of business. The application of this principle has a direct and most important bearing on the success of the individual manufacturer and the attainment of industrial supremacy by the country. It may almost be said that in proportion as it is followed, other things being equal, will there be progress in the direction of achieving a commanding position in manufacturing.

There are, indeed, some examples of manufacturers who are not obliged to give up what used to be considered a reasonable profit and are still carrying on a successful and in some cases a large and growing business, but these are recognized as quite exceptional. In the production of any goods in which there is real competition it is necessary to figure costs closely, and constantly to make modifications in machinery and manufacturing methods, to practice every possible economy, and in general to improve and increase facilities so as to be in a position to put the goods on the market at a minimum price. This, of course, forbids the adding of a large profit, because this would be a premium directly given to their competitors. The establishment, indeed, of artificially high prices by agreement among manufacturers goes counter to the principle under consideration, and gives encouragement to other producers, whose activity before long usually requires a return to the old condition of things, with even narrower margins.

At the present time of high pressure on manufacturing facilities, owing to a demand which in many lines exceeds the supply, there is fortunately an increase in profit which emphasizes, while at the same time it makes up for, the ordinary lean years. It is, however, generally conceded that the existing conditions are exceptional and temporary. There is to be a return to a state of things in business in which close figuring as to costs and the acceptance of narrow profits will be necessary, a condition of things indeed in which those who can produce goods at a slight percentage of cost below their competitors will have an advantage which will give them the market. So generally is this recognized that even in these days when it is easy to sell goods at remunerative prices more attention than before is being given to improving manufacturing facilities and reducing cost by every expedient. In this the example of the great consolidations, whose methods are the most perfect and whose regard for the most insignificant economy is an impressive lesson in correct business principles, is having its effect on the policy and methods of many smaller concerns. They recognize that only by the adoption of the best methods in manufacturing will they be able to hold their own when the tide turns and goods are sold again at prices which approximate unpleasantly near the cost line.

Condition of Trade.

The demand for all classes of goods is excellent, and is stimulated to some extent by the present season being about two weeks earlier than last year. Complaints are made by jobbers of their inability to get prompt shipments of some lines of goods, but on general lines it is believed that manufacturers are in a position to supply them with fair promptness. The volume of business, taking the country as a whole, is large, especially in spring goods. Buying appears to be devoid of speculative features. Government reports of the excellent condition of crops inspire confidence in the future prosperity of the country. The cold storms which have been quite general have retarded the business of dealers, who are, however, anticipating their requirements for such goods as will be in immediate demand when warm weather brings the growing season. Orders for some lines of goods for fall delivery are being placed, and the trade generally are buying freely so as to keep stocks full. Labor troubles are temporarily affecting business unfavorably in some sections of the country, reducing the volume of transactions in goods used by the building trades.

Chicago.

(*By Telegraph.*)

Local jobbers of Hardware are more concerned at the present time in obtaining goods than in securing orders. Thus far the month of April has been even more active than the month of March, when several jobbers reported the highest record of sales in their experience. The call from dealers throughout the country is now very urgent for steel goods, especially for Forks, Rakes, Hoes and similar Agricultural Tools, but manufacturers are reported to be exceedingly slow in filling contracts. There is also an active demand for the lower grades of Shovels, the demand being much in excess of the available supply. The highest priced goods, however, are readily obtainable. A special effort is being made for the sale of Scoops, Stove Pipe, Elbows, etc., for fall delivery, and salesmen are meeting with considerable success. The demand for Hatchets and Hammers and other Carpenters' Tools has never been more active, some jobbers reporting the heaviest sales in their experience. They also report much difficulty in obtaining certain brands. The same is true of Wire Cloth and Poultry Netting which are now in active demand. Lawn Mowers are being distributed actively and supplementary orders are being received with urgent requests for prompt shipments, but under the present conditions it is possible to fill only a portion of the orders on hand. Shipments of Refrigerators direct from the factories, and also through local jobbers, have been on a liberal scale, but even in this line many complaints are being received about shipments. There has been an increased demand for Strap and T-Hinges, some further large orders having been received, distributors recognizing that the low prices are especially inviting, and that the tendency is toward higher rather than lower values. The call for Heavy Hardware has continued very satisfactory, without further change in prices of the leading articles being reported. It is worthy of note, however, that a stronger tone has been developed in Drive Well Points and Cylinders, with higher prices anticipated. In Builders' Hardware the city trade has been unusually quiet, but satisfactory orders have been received from the country. Notwithstanding the increased facilities for distributing manufactured goods and the ability to assemble fuel and raw material more quickly, the largest Nail and Wire mills note little progress being made against the heavy volume of business already booked. For the first quarter of the year both sales and shipments show a material increase over the corresponding months of last year, but even so manufacturers are embarrassed more than ever by unfilled orders. The agricultural outlook for next season is brighter even than last year, a record breaking wheat crop and a very heavy hay crop being

reported on present conditions. Although it is too early to place much reliance on the outcome, the moral effect is to develop a confident feeling, offsetting to some extent the timidity if not the anxiety regarding the financial outlook. Although a stringent money market may be anticipated and a tendency to watch credits more closely, the industrial situation seems to be essentially sound. Independent mills have orders for Nails which will require another month to fill, and business booked for Barbed Wire and Wire Fencing will require even a longer time to make shipments. Under the circumstances there is no great effort being made for new business except for future delivery. While prices are firm, the opinion prevails that no higher prices will be made for this season.

St. Louis.

(By Telegraph.)

When it can be said by Hardware jobbers that they cannot get goods in some lines fast enough from the manufacturers to supply the demand, it certainly speaks well for the current volume of trade in hand. Perhaps the most essential feature at this time is the prospect for the season's crops and the Government report issued last week puts a favorable aspect to the situation. There are few sections of territory visited by St. Louis jobbers that are not at this time contributing a very satisfactory volume of orders. The trade in Window Screens and Screen Doors is very pronounced. Ice Cream Freezers, Refrigerators, Lawn Mowers, Meat Cutters, Steel Goods, &c., are also live sellers. Builders' Hardware, Carpenters' Tools, Shelf Goods and in fact all other general lines are moving in large quantities. The heavy department of the market is active and the demand for Bars, Angles, Channels and other heavy lines is good.

Louisville.

W. B. Belknap & Co.—The market is held up by the enormous steady demand for goods. This demand is about as healthy as we ever knew it. Each day brings its full mail bag, and the whole country seems to be on the legitimate buy. In other words, if a man needs anything to improve his working outfit he has the money wherewith to purchase. This has not always been the case, as we know. There is no buying for speculation, if we can read the signs right, but a strong effort to secure deliveries of what has already been bought.

Railroads are still in arrears as to time of transit and deliveries of goods, but the excellent boating stage which the rivers are in and which they promise to stay in for some time (as rainfall has been general and the ground has had a thoroughly good soaking) will do much to relieve the pressure on the rails.

Much interest is taken in the decision of the merger question, for it seemed as though there must be some boundary drawn to the schemes of combination and consolidation which were going on. We are apprehensive lest everything visible should be consolidated into one structure and that would topple over and great would be the fall of it, but if we could have some opposing influences still left they may serve to keep it in the perpendicular, which is the thing to be desired.

The current phrase now to explain the situation is that of "undigested securities." Possibly our great financial doctors in the East have in preparation a pill or solution which is warranted to do away with that unhappy "full feeling," which indigestion invariably brings. If it becomes fashionable to take it in the East the West will no doubt follow suit. We would naturally want to show that we were capable of doing gracefully anything the rest of the world can do, but if these securities which have been offered in the last year or two are classed as undigested, do let us call a halt before we reach the stage of nausea.

San Francisco.

Pacific Hardware & Steel Company.—Trade conditions on the coast are very good to-day, and we have to report prosperous times in all lines as well as Hardware. The threatened strike by the employees of the street car lines of San Francisco has for the present been averted, and an amicable settlement is looked for to what might have been a very serious matter.

Fair weather has been the means of causing building operations to resume, and never in the history of the coast has there been so much doing in this line, and as a consequence Building Hardware and building material is in great demand. Particularly steel for structural purposes is being used extensively, and the inquiries for same are more than the supply in sight.

The season for trout fishing opened April 1, and Fishing Tackle is now moving freely.

There is a general feeling in the country and in the city that the year is full of promise; the weather is all that could be desired, the southern part of California being particularly blessed with copious rains, which were very much needed. The condition of the farming community all through the State is good, and unless something unforseen happens the production will very much exceed that of previous years.

Baltimore.

Carlin & Fulton.—Trade has kept up wonderfully well, with no indications of its diminishing for some weeks to come.

We regret to hear of impending labor troubles, especially among the building trades, but we hope they will be averted by arbitration and common sense. Many improvements, we understand, are projected, but contractors hesitate to undertake them with the uncertainty attending labor matters, which will, however, be adjusted within the next few weeks.

The railroads, we think, are catching up, and the delays in transportation are not quite so great as a few weeks ago. The market seems in a very healthy condition, and there seems to be no surplus goods of any kind.

After the experiences of last year in regard to the difficulty of obtaining goods when most needed, the disposition of the trade generally is to anticipate their wants and enter orders for shipment at or before the time needed, instead of waiting until the last moment to make the purchase.

All agricultural products seem to be yielding good prices (though of course the present price of cotton benefits the farmer very little as far as last year's crop is concerned), and believing agriculture to be the basis of all prosperity we think the outlook for the future is good.

Portland, Oregon.

Corbett, Failing & Robertson.—We are called on this week to chronicle the death of the Hon. H. W. Corbett, founder of this business. He came to Portland 53 years ago when it was a straggling settlement of 400 inhabitants. From the start his active indomitable will and perseverance were a factor in the upbuilding of the community and State. He represented Oregon in the United States Senate from 1867 to 1873, during the troublesome period of reconstruction when the caliber of Senators stood out as giants as against the pigmies of to-day, Sumner, Wilson, Fessenden, Conkling, Sherman, Morton, Schurz, Carpenter, Thurman and Edmunds being associates of his. Of late years his interests were in the banking business, he being president of the first National Bank, also of the Security Savings Bank. While the business world moves on even after a prop such as he was is withdrawn, still the community cannot but help feel the loss of a master mind.

Clearings last week showing increase of 67.4 per cent. over a year ago and leading all cities of any prominence in ratio speaks volumes as regards trade.

We were honored by a visit from Mr. Kirk, president of the National Hardware Association, the past few days and felt flattered by the impression he received regarding our State, its location, growth and future.

Mr. Morgan's published optimistic interviews regarding financial outlook remind us of early day snipe hunting that the Eastern tenderfoot indulged in when first initiated into good fellowship and standing in the far West. He was taken by boat to some island after dark and perched on a limb of a tree and told to hold the sack with lighted candle, and the snipe would walk into the trap. The crowd that were to watch his efforts from a dis-

tance, of course, took the boat and rode home, leaving Mr. Tenderfoot to return the best way he could. Mr. Morgan is now holding the bag and inviting suckers instead of snipe to relieve himself and associates of an accumulation of high priced chips and whetstones. It is to be hoped as few investors will be beguiled at this late day into the trap as were snipe by the candle of the tenderfoot.

Decline in price of Pig Iron so early in the year is a bad omen for the quarters to follow.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Activity in trade circles continues without any abatement since our last letter to *The Iron Age*, although during the past two weeks we have had very rainy weather, which has to some extent prevented farmers reaching the various towns throughout our State ; nevertheless the season is earlier than usual and so far advanced that buyers feel the necessity of placing orders in order to have their goods for immediate calls looked for after the rainy season is ended.

Nearly all lines of goods are being held firm and the probability of scarcity in Wire Cloth and Poultry Netting has caused a stiffening of price on both these articles and they are held firm at advanced prices. There is a probability of scarcity in Agricultural Implements, especially those goods manufactured by firms belonging to the combination located in our city. This is largely owing to two of the works who formerly were independent manufacturers having been closed by the combination and the only firm remaining are of course obliged to take up the lines manufactured by the two retired firms. Quite a number of other goods are becoming temporarily scarce, with daily promises from manufacturers that back orders given early in the season will be completed at an early date. Screws, Barbed Wire, Wire Nails, Cut Nails and Shot are all held firm at manufacturers' advanced prices.

A scarcity of cars still exists, although the heads of railroad departments assure us that the supply will be equal to the requirements in the rear future. Collections are fair.

Cleveland.

THE W. BINGHAM COMPANY.—We are exceedingly busy receiving orders and forwarding goods in all lines, especially so in spring goods. The season this year is about two weeks in advance of last year, therefore there is a great demand for spring goods at this time. Duplicate orders for goods that were sold early and were shipped out to our trade, are coming to us now, showing that the stock of spring goods is beginning to get a little broken and is going to make a good heavy demand all through the spring, or at least for the next 60 days. The opening of lake navigation is causing a great many inquiries for a large amount of goods to go forward by first boat, and it will aggregate a very large tonnage.

We are short just at the present time in Wire Cloth and Netting from the manufacturers, owing to their inability to get Wire promptly, but the jobbers in this section have a well assorted stock on hand and are able to supply their customers promptly.

There will be a large tonnage of Wire and Nails go out of Cleveland market in the next 60 days, both by rail and water. The prices on these goods are firm and steady, therefore customers needn't be afraid to buy liberally. We have nothing special to report in this section except that we are all busy.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY. — The business situation perceptibly brightens as the season for warmer weather approaches.

An active demand exists for all kinds of Hardware and kindred goods, and a general improvement continues to develop all along the line, while indications on all sides point to an open season of general activity and enterprise.

The main difficulty just now among the jobbing trade is to procure prompt shipments from manufacturers, many of whom, on certain lines, claim they are away behind on their orders, otherwise the market is featureless, with the exception of a few desultory advances in prices.

A satisfactory measure of prosperity exists here, as elsewhere, and the prospects for the future reflect a continuance of the present agreeable conditions.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The spring trade continues to be very heavy. Movement of all seasonable goods is larger than ever known before. Salesmen on the road are sending in as large orders as in January and February, and the mail order business from country merchants is enormous.

Prices are being well maintained by the houses in this city, and the market is extremely firm and in a most satisfactory condition. The credit men of the different local houses report fine collections.

NOTES ON PRICES.

Wire Nails.—The mills are filled with orders, and deliveries are not always made promptly. The condition of the market is very satisfactory, having a firm tone with heavy demand. Quotations are as follows:

Jobbers, carload lots	$2.00
Retailers, carload lots	2.05
Retailers, less than carload lots	2.15

New York.—The local market is feeling the effects of labor troubles to some extent, which results in a smaller volume of business. The tone of the market is firm, and demand is steady. Quotations are closely adhered to and are as follows: Single carloads, $2.20; small lots from store, $2.25 to $2.30.

Chicago, by Telegraph.—Both shipments and sales of Wire Nails for the first quarter show a material increase over those of the corresponding time a year ago, and supplementary orders are still being received to a liberal extent. Although the mills are working more satisfactorily and are having less difficulty in assembling raw material and fuel, with a better supply of cars for distribution, they find much difficulty in keeping pace with the business offering and the filling of orders already booked. The market is firm in tone, and while prices might be advanced, there is a conservative spirit prevalent, and it is doubtful if any advance in prices will be made this season. The jobbing trade is quite liberal, with a firm and confident tone. Sales are being made on the previous basis, official prices being $2.15 to $2.20 in carload lots, f.o.b. Chicago. Broken cars sell at 5 to 10 cents higher. For Galvanizing, 75 cents per keg, and for Tinning, $1.50 extra per keg, are charged.

St. Louis, by Telegraph.—The market for Wire Nails is quite active and jobbers report conditions satisfactory. The quotation in small lots from store is $2.35.

Pittsburgh.—Demand for Wire Nails is good and the market is strong in every way. Some of the mills are behind in shipments, due to the continued scarcity of Steel, which interferes with the output to some extent. Old contracts, together with new orders being placed, will give the mills full work for some time to come. No advance is now expected in prices, which are regarded as being at a conservative point. The tone of hte market is firm. We quote: Wire Nails, $2 in carloads to jobbers, $2.05 in carloads to retailers and $2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days; for Galvanizing Nails 75 cents per keg is charged and for Tinning Nails $1.50 per keg extra.

Cut Nails.—The demand is excellent and the market firm. Some delay is caused at the mills in filling orders, owing to the lack of Steel. Quotations are as follows: $2.15, base, in carloads, and $2.20 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

New York.—The local market is somewhat affected by unfavorable weather for building and by labor troubles. Otherwise demand is steady, and the market

firm in tone. Quotations for carloads and less than carloads are as follows:

Carloads on dock	$2.29
Less than carloads on dock	2.33
Small lots from store	2.40

Chicago, by Telegraph.—A good demand for Cut Nails is reported, and the market remains firm as previously quoted. Difficulty in obtaining prompt shipments is still noted. The jobbing trade is of liberal proportions and the market is strong. Sales continue to be made on the basis of $2.30 in carload lots and $2.35 in less than carload lots for Steel, Chicago. Iron Nails are held at $2.45 to $2.50 per keg from store.

St. Louis, by Telegraph.—A very good demand continues for Cut Nails, and jobbers' quotations are unchanged as follows: Steel at $2.40 and Iron at $2.60.

Pittsburgh.—There is a good steady demand for Cut Nails, and we are advised that prices are being firmly held. In some cases shipments are not made as promptly as desired, owing to the scarcity of Steel, but there is now less trouble from this cause than for some time. For April delivery we quote: Steel Cut Nails, $2.15, base, in carloads and $2.20 in less than carloads; Iron Cut Nails, $2.25, base, in carloads and $2.30 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

Barb Wire.—Conditions of the market are unchanged since our last report. The amount of new business offering is moderate, while mills are busy on contract orders placed some time since. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.30	$2.60
Retailers, carload lots	2.35	2.65
Retailers, less than carload lots	2.45	2.75

Chicago, by Telegraph.—Although there has been a more active movement, shipping facilities having improved, the new business offering keeps the mills far behind the filling of contracts. Thus far during the season both sales and shipments are in excess of a year ago and the outlook is favorable to a continued active movement for the remainder of the season. The jobbing trade has further improved and the market has remained firm. Sales of Galvanized are being made on the basis of $2.75 to $2.80 in carload lots, and Painted at $2.45 to $2.50, the outside price being to retailers. For small lots 5 to 10 cents additional is charged.

St. Louis, by Telegraph.—A very considerable volume of demand upon the jobbers for Barb Wire rules in this market. Quotations in small lots from store continue at $2.65 for Painted and $2.95 for Galvanized.

Pittsburgh.—New demand is only fair, but the mills are busy on old contracts placed some time since. Some of the mills are behind on shipments, but this is the exception, deliveries being better than for some time. Prices are firm and we quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, $2.30, Galvanized, $2.60, in carloads to jobbers: Painted, $2.35, Galvanized, $2.65, in carloads to retailers: Painted, $2.45, Galvanized, $2.75, in small lots to retailers.

Smooth Fence Wire.—Mills are filled with contract orders, which will keep them busy for some time, while new business is coming in quite freely. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.90
Retailers, carloads	1.95
Less than carloads	2.05

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12&12½	13	14	15	16	
Base.	$0.05	.10	.15	.25	.35	.45	.55	Annealed.
$0.30	.35	.40	45	.55	.65	1.05	1.15	Galvanized.

Chicago, by Telegraph.—While the attention of manufacturers is largely absorbed in the filling of contracts already booked, there is sufficient new business offering to insure a full tonnage for the mills during the remainder of the season, and the market remains firm. The jobbing trade has continued active and a confident feeling prevails. The following are the prices current: Nos. 6 to 9 on the basis of $2.05 to $2.10 in carload lots on track, and $2.15 to $2.20 in less than carloads from store, Galvanized bringing 30 cents extra for Nos. 6 to 14, and 60 cents extra for Nos. 15 and 16.

St. Louis, by Telegraph.—The market is firm and is ruled by a very well sustained demand. Jobbers continue to quote No. 9 at $2.30 and Galvanized at $2.60 in small lots from store.

Pittsburgh.—New tonnage is mostly for small lots, the large contracts having been placed some time since. Spring trade this year will not be up to former years. Prices are pretty firmly held and are as follows: Plain Wire, $1.90, base, for Nos. 6 to 9 in carloads to jobbers, $1.95 in carloads to retailers and $2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

Sheet Zinc.—Another advance is announced in the price of Sheet Zinc, under date of April 7. The price is now $6.75 per 100 pounds in 600-pound casks, subject to the following discounts:

	Cash with order. Per cent.	Quantity. Per cent.	Total. Per cent.
Carload lots	3	5	8
9000-pound lots	3	3	6
6000-pound lots	3	2	5
3000-pound lots	3	1	4
Less than 3000 pounds	3	0	3

Cordage.—The demand for Rope is steady and in fair volume. Quotations are as follows, on the basis of 7-16-inch and larger: Sisal Rope, according to quality, 8 to 10 cents; Manila, 11 to 11½ cents per pound.

Paris Green.—The distribution of Paris Green by manufacturers has been very light for the past two weeks. Should the month of May be rainy it is estimated that there will be enough Green to supply demand, but should it be hot, growing weather there will be a scarcity. Vitriol is scarce and high in price and it is much easier to obtain a single barrel from a jobber than a carload from a manufacturer. Quotations remain unchanged, as follows:

Less than 1 ton.	Per lb.
Arsenic kegs or casks	13½c.
Kegs, 100 to 175 pounds	14c.
Kits, 14, 28, 56 pounds	15c.
Paper boxes, 2 to 5 pounds	15c.
Paper boxes, 1 pound	15½c.
Paper boxes, ½ pound	16c.
Paper boxes, ¼ pound	17c.

One to 5 tons, 1 cent per pound less; 5 tons and over, 1½ cents per pound less.

Glass.—It is now estimated that there will not be more than 150 window glass pots in operation after April 18, as several factories which had not decided upon their future course of action have, it is understood, agreed to close on that date. This gives a firmer tone to the market, and fewer reports of prospective price cutting are in circulation. Quotations of the jobbers' association, for either single or double strength, are as follows:

	Discount.
From store	90 and 10 %
F.o.b. factory, carload lots	90 and 20 and 2½ %
F.o.b. factory, 2000-box lots	90 and 25 %

Oils.—*Linseed Oil.*—Manufacturers of city brands have reduced the price of Raw Oil in lots of 5 barrels or more to 44 cents per gallon. The former quotation of 46 cents has been in a measure fictitious owing to the lower cost of seed. State and Western brands of Oil are quoted, in the above quantities, at 42 cents for Raw. Demand is exceedingly light, especially for the season.

On April 18, J. Stevens Arms & Tool Company will move their New York headquarters from 80 to 98 Chambers St. In April of last year they moved from 318 Broadway to their present quarters, thinking they would be ample to take care of their increasing business for several years at least. They find, however, that they are in need of much more room, which will be supplied in the new location, which contains four times as much space as the former, thus providing much better facilities for executing business with dispatch. The company allude to this change as in keeping with their growth at Chicopee Falls, Mass., where they now employ 1100 men, as compared with 44, seven years ago, and yet find it a difficult matter to fill orders promptly.

NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

A REGULAR monthly meeting of the New England Hardware Dealers' Association was held at the United States Hotel, Boston, Wednesday evening, April 8, President John H. Sayward presiding. Owing to a severe rain storm the attendance was not as large as expected, but the meeting was interesting and profitable. At the conclusion of the dinner President Sayward introduced the subject of the evening: "How to Improve, Create an Interest, Increase and Generally Obtain the Best Results from Our Association," stating that it was time something should be done to increase the efficiency of and the interest in the organization. It should have some definite objects in view, and pursue them with energy and steadfastness of purpose. He believed much could be done and predicted that it would be done.

Pricing Committee Report.

J. B. Hunter, chairman of the Pricing Committee, submitted the following report, supplementing it with an interesting address, the keynote of which was that the profits of the retail Hardware dealer were too small and that merchants should look to their own customers for a profit instead of to their neighbor's customers:

Gentlemen: As chairman of the Pricing Committee, to which I was elected at the last meeting of the association, I called a meeting of the committee on Friday, the 3d inst., also inviting D. Fletcher Barber and Joseph Williams. Mr. Mackey and Mr. Williams were unable to attend.

The gentlemen who attended this meeting decided that, in order to make prices on special lines of Hardware, it would be necessary to get an expression from the members of our association whether or not if prices were made they would be sustained.

It was our unanimous opinion that in order to make prices which would be lived up to by our members it would be necessary to have a person in the employ of our association who should visit each member of our association and get him to sign an agreement or pledge his word that he would not deviate from prices which we may decide upon.

We also talked of the advisability of having a room to be used as headquarters for our association with a suitable man in charge, who would perform such duties as might be required of him. It seemed to us that action along this line would be absolutely necessary before your Pricing Committee could accomplish anything in a substantial way.

On motion of Mr. Hunter it was resolved to add to the Pricing Committee one member from each of the prominent Boston houses.

Discussion.

A general discussion followed, which was participated in by Austin H. Decatur, J. Carleton Nichols, Calvin M. Nichols, Sewall D. Balkam, Myron W. Tarbox and George W. Burditt. The discussion revealed a strong undertone of hopefulness and the purpose of making the association stand for something definite in the way of benefit to the retailer, and the general opinion seemed to be that proper means to bring this about would be the employment of a capable man to take charge of the work of the association, giving his whole time to it, and by the establish ment of centrally located headquarters in his charge. The details of such a plan have been under consideration by some of the more active men in the association for some time past, and it is hoped that something may come of it. It was suggested that a stock company be formed with sufficient capital to carry out the idea. It was revealed by questions that an efficient organization modeled somewhat on the New England Iron and Hardware Association could easily be made to be worth $100 a year to each of the retailers in greater Boston and vicinity. Nothing definite was decided upon at this meeting, but the general sentiment seemed to be that the association should have a strong collection and credit information bureau and that price-lists of staple articles, which are now sold at little or no profit, should be prepared. As soon as the new plan of the organization can be determined upon an effort will be made to make the membership large enough so that wishes of the association will have weight with jobbers and manufacturers, making a co-operative body sufficiently strong to generally improve business conditions in the retail Hardware trade. The fact was brought out that most every retail dealer suffered to a considerable extent from bad debts, and often a customer who hadexhausted his credit at one store went to a neighboring establishment and started a new bill. This could easily be prevented if the dealers exchanged information of this nature through an official of the association, and it seemed to be the opinion of those present that a properly conducted organization could be made so valuable to the trade that instead of having to seek members they would soon find them asking to come in.

On motion of S. D. Balkam it was decided to send out price cards with the next notice requesting members to give their selling prices for the articles on the list.

J. E. Farrel of Hyde Park was elected to membership.

President Sayward announced the following Entertainment Committee for the May meeting: A. M. Wiley, W. D. Parlin, George W. Burditt.

Henry M. Sanders was elected delegate to the Massachusetts State Board of Trade for three years.

WATERBURY BRASS COMPANY.

THE WATERBURY BRASS COMPANY, 122-130 Centre street, New York, call attention to the large stock of brass and copper carried at this depot. In Seamless Brass and Copper Tubes they have both 12 and 20 foot lengths, also iron pipe sizes, both brass and copper, plain, tinned and nickel plated, as shown by a stock sheet in detail prepared frequently for the trade. They claim to carry the largest stock of Sheet Brass in both narrow and wide widths kept in stock in New York. They are also supplying a large demand for Brass Rod, which is carried in sizes from ⅛ to 2½ inches in diameter, including Rods from ⅛ to 1 inch by thirty-seconds, and from 1 to 2½ inches increasing by sixteenths. It is referred to by the company as free turning stock, and suitable for drilling and screw work. The trade has also largely increased in their Pope's Island White Metal, which is suitable for a great variety of purposes, and is being used extensively for bar fixtures, steam tables for hotels, sinks and refrigerator linings.

THE BAVIER NOVELTY COMPANY.

THE BAVIER NOVELTY COMPANY, Windsor, Conn., incorporated under the laws of Connecticut, were organized last November. They bought the property formerly known as the Congregational Chapel and have fitted it up as a factory to manufacture the Bavier Bottle Stoppers and a general line of novelties. They also bought a large lot bounded on one side by the New York, New Haven & Hartford Railroad, giving them ample facilities for shipping, and affording them an opportunity to enlarge the works when necessary. The company have recently bought up the Maynard Lawn Mower Sharpener business and patents and will continue the manufacture of this article. It is the company's purpose to manufacture novelties in paper, wood and Hardware, making the Bottle Stoppers a specialty. The officers of the new company are F. H. Tolles, president; Neilson Bavier, secretary, and S. H. Barber, treasurer.

DEATH OF SAMUEL H. WILSON.

SAMUEL H. WILSON died at his home, 328 Madison street, Brooklyn, N. Y., of pneumonia, Wednesday, April 8, after an illness dating only to the preceding Saturday, when he was at business as usual and apparently in good health, except that he had a slight cough. Mr. Wilson was widely known in the brass and copper trade from his connection with Wallace & Sons, which began about 1871 and lasted until 1896, when Wallace & Sons went out of business. The following two years were spent with the Coe Brass Company, since which time he has been back with his old associates, now the U. T. Hungerford Brass & Copper Company, who have continued the New York branch of the business formerly conducted by Wallace & Sons under the management of U. T. Hungerford. Mr. Wilson was a very conscientious, earnest, reliable and capable worker and highly thought of by his employers and associates.

NEW ENGLAND HARDWARE AND IRON ASSOCIATION.

THE tenth annual dinner of the New England Hardware and Iron Association was held at the Hotel Vendome, Back Bay, Boston, on Tuesday evening, 14th inst. The arrangements for the dinner were in charge of John T. Boyd, Oscar A. Shepard and H. W. Waite. Charles Clark Adams acted as toastmaster, and performed his duties in the usual acceptable manner, keeping the post prandial exercises moving at a lively rate, and introducing a choice budget of humorous stories.

Preceding the dinner a reception was held, at which the following acted as a committee to welcome the members and guests, who numbered about 125: Harry L. Doten, chairman; E. Loring Richards, Charles Dowse, Albert C. Ashton, Harry W. Waite, William Hill, Charles F. Bragg, P. F. Burke, Allan J. Chase, Austin H. Decatur, George Herrick, Daniel G. Tyler, Edward P. Sanderson, Hiram N. Lathrop. Music was furnished by Daggett's Orchestra, both before and during the dinner. Song sheets were at each plate, the company joining in singing from them between the courses.

OSCAR A. SHEPARD, President.

The tables were arranged in the form of the letter E, with a round table in the rear. They were handsomely decorated with cut flowers and the room was appropriately draped with bunting. At the head table were seated Oscar A. Shepard, president, and guests, including Arthur W. Dolan, president Boston Common Council; T. James Fernley, secretary-treasurer National Hardware Association; Charles E. Adams, president Massachusetts State Board of Trade; Hon. James J. Myers, speaker of the Massachusetts House of Representatives; Frank Dickerson of the American Tin Plate Company; Charles A. Bartlett; Col. Edward Anderson, D.D.; Charles Clark Adams of Sargent & Co., and Walter C. English of *The Iron Age*. The seating arrangements were excellently looked after by John T. Boyd of Yale & Towne Mfg. Company, chairman of the committee, so that the representatives and guests of the several concerns were grouped.

Out of Town Guests.

Each of the prominent Boston jobbing houses, including Bigelow & Dowse Company, Frye, Phipps & Co., Baldwin, Robbins & Co., Burditt & Williams Company, Hardware Agency Company, Chase, Parker & Co., Dana Hardware Company and Graves, Brown & Co., had a number of guests, and the following came from out of town: William Chamberlain and T. B. Coles of Emery, Waterhouse & Co., Portland, Maine; Henry Prentice King of King & Dexter Company, Portland, Maine; Henry R. Pierson and Charles E. Dresser from North Adams, Mass.; Charles F. Bragg from N. H. Bragg & Son, Bangor, Maine.

From New Britain, Conn., came L. H. Pease of the Stanley Works; Charles M. Jarvis, Charles B. Parsons and Charles E. Wetmore of P. & F. Corbin; M. L. Bailey of Union Mfg. Company; Norman P. Cooley of Hart & Cooley Company; H. S. Hart and C. A. Earle of the Russell & Erwin Mfg. Company. From Nashua, N. H., L. F. Thurber of White Mountain Freezer Company. From Lowell, Mass., E. J. Neale of Peck, Stow & Wilcox Company. From Concord, N. H., D. Arthur Brown and Harry A. Brown of Concord Axle Company.

The delegates from Sargent & Co., New Haven, Conn., included J. D. Sargent, James Denny, C. L. Titus and W. A. Rice. A. Milne & Co., were represented by Luther Little; Pennsylvania Steel Company by Charles S. Clarke; Standard Horse Shoe Company by R. H. Boutwell.

The iron and steel houses represented included Albert H. Inman of Pratt & Inman Company, Worcester; Arthur C. Harvey, Boston; Josiah N. and William H. Bacon of Bacon & Co., Boston; George H. Wightman and Wilbur Sargent Locke of Carnegie Steel Company; William N. Horne of Horne Bros., Boston; William Q. Wales of Brown-Wales Company, Boston.

Among the metal dealers present were Henry W. Waite and A. H. Rantlett of Waite, Rantlett & Co., Boston; Harry L. Doten of Austin & Doten, Boston.

John H. Sayward, Haverhill, Mass., president of the New England Retail Hardware Dealers' Association, and other representative retail Hardwaremen were present. Men from every branch of the trade were seated about the tables and found themselves in congenial company. The *menu* was excellent, and much credit is due the association for the admirable manner in which every detail of the entertainment was planned and carried out.

President Shepard's Address.

At the conclusion of the dinner Oscar A. Shepard, president of the association, addressed the company as follows:

It is not my intention to take any of this valuable time. We have those with us who are prepared to enlighten us upon different subjects, and I know you are anxious to hear them; but for the benefit of our guests who may not understand just the object of this association I will say this association was formed about ten years ago, comprising firms who are manufacturers, jobbers and wholesale dealers in Metals, Iron, Heavy and Light Hardware and allied lines, many of whom are natural competitors. In its formation there were several objects.

The object to which I wish to call your attention particularly is this, the development among members of the spirit of harmony and friendship. Harmony and friendship—two of God's noblest words. With friendship a man can accomplish anything; without it, what can a man do? With it, a man has the *entrée* to the innermost circles of the best in the world; without it, he is indeed a lonesome creature.

The spirit of harmony and friendship among these firms, now numbering in our association 116 of the best of New England, has reached the most satisfactory proportions. We can well be proud of it, and such an organization as this will at once appeal to you, for you see tonight the representatives of these firms (and a representation of capital reaching to the enormous sum of $2,000,000,000) who yesterday, to-day and to-morrow are natural competitors in business, to-night sitting side by side, elbow to elbow, looking into the level of each other's eyes and seeing therein that which competitors do not usually see—that their business associate is indeed a good fellow.

In the recognized push of the American people, in the onward rush of mercantile affairs, the average business man of to-day does not have the opportunity, the inclination, the ability, it may be, to acquire a full knowledge of questions of natural and popular import, but by an almost divine arrangement, ordered and arranged by powers greater than ours, we are privileged to surround ourselves by those who by opportunities, tendencies and

talents are well equipped to give to the busy man this desired information.

When we want to ascertain how the affairs of a great State, even the dear old Commonwealth of Massachusetts, are carried on, we are privileged to call upon our good friend, Speaker Myers. If we want to learn how to carry on the affairs of a great city, even our city of Boston, on business principles, we are privileged to go to his Honor, General Collins. If, in search of more knowledge, we want to understand the affairs of that nerve center of a city and that nerve stirring organization called the Common Council, we go to Brother Dolan. If we wish to know how the great questions of to-day are assorted and manipulated and put into proper channels by the State Board of Trade, we call upon President Adams; when we care to know how to be a successful lawyer and a good fellow, we go to our dear friend, Charlie Bartlett; when we want to understand how to be good business men tempered and fortified by Christian principles, we have Colonel Anderson, and when we are seeking a gentleman who is well equipped to act as toastmaster at a dinner like this, there is only one, and I have the pleasure of presenting as our toastmaster this evening our business associate and friend, **Lieut. Charles Clark Adams.**

Toastmaster Adams' Remarks.

Mr. Adams was greeted with hearty applause, the company all joining in singing, "For He's a Jolly Good Fellow." Mr. Adams spoke as follows:

We meet to-night to celebrate our annual banquet, to clasp hands again as competitors, yet friends, and to rejoice over the wonderful prosperity which our particular branches of business have enjoyed during the past year. You may believe there can be no clouds in the mercantile sky, yet many deep thinking men are already sounding some warnings that as business men we may well consider a moment.

A foreigner writes thus: "One of the most impressive things in this glorious and misgoverned country is the happy condition of the laboring people, who are in constant trouble with their employers. Everywhere the workingman is happy, prosperous, and either on a strike or getting ready to strike about May 1. Everywhere I find contentment and subdued murmurs of hatred for the ruling classes. The working people go about with smiling faces and an eager longing to throw a few rocks just for luck. Every man, however poor he may be, feels that he is a part of the body politic and fully realizes that the machinery of the Government is run by a few bosses in the interests of those who have money to pay for such legislation as they want. The result is a united and homogeneous people rapidly drawing toward a bloody revolution."

Another American writer says the great business interests are growing hostile toward President Roosevelt because he is supposed to be in sympathy with the workingman and hostile to the trusts, and predicts that we are rapidly drifting toward a condition when there is to be a contest for a Government of the people, by the people and for the people, and writes that it will be an irrepressible conflict and every man will have to decide on which side he will fight.

Can it be possible that the great prosperity of the last five years is to end so badly as this? May it not be every man's duty to wake up and perform our political religions and moral duties? In other words, "Let every man be on guard." Yet beyond all these warnings, let us remember that divine teaching, "Thou shalt love thy neighbor as thyself." "As ye would that men should do to you, do ye even so unto them."

Mr. Adams then presented A. W. Dolan, president of the Boston Common Council, who in the absence of Mayor Collins spoke for the city of Boston. Mr. Dolan extended the greetings of the municipality, and brought his address to a close with some complimentary references to the association and its work.

The toastmaster read a telegram from R. A. Kirk, president of the National Hardware Association, expressing regret at his inability to be present, saying "Distance alone prevents my acceptance. Hearty wishes for a pleasant evening."

The next speaker was T. James Fernley, secretary-treasurer of the National Hardware Association. He commended the New England Association as a model among similar organizations, told a number of good stories and kept his auditors in good humor throughout his 15-minute address.

Hon. James J. Myers brought the greetings of the Commonwealth of Massachusetts, and spoke of the great progress of the country during the past ten years, and especially that of the last year. He referred to the great combinations as a menace to republican government, and commended means of restraint.

Other speakers were Frank Dickerson of the American Tin Plate Company, Charles A. Bartlett and Col. Edw. Anderson, D.D. In introducing Colonel Anderson, Mr. Adams referred to his connection with the history of the country, beginning with the John Brown war in Kansas before the Civil War. In the latter conflict Colonel Anderson commanded a brigade of Indiana cavalry, and it is related that his commission as Brigadier-General, signed by Secretary of War Stanton, laid on President Lincoln's table at the time of his assassination. Afterward President Johnson signed the commission, but Colonel Anderson refused to accept it from him. He is now a minister of the Congregational Church, and his address was one of the most interesting of the evening.

The dinner was highly successful, the post prandial exercises being less formal than usual. The utmost good feeling prevailed, and a current of sympathy was easily established between speakers and auditors.

Those Present.

Following is a full list of those who participated in the gathering:

Charles E. Adams, T. James Fernley, Arthur W. Dolan, Oscar A. Shepard, Hon. James J. Myers, Frank Dickerson, Charles A. Bartlett, Col. Edw. Anderson, D.D., Charles Clark Adams, Thomas H. Baldwin, John H. Robbins, Austin H. Decatur, Wm. A. Hopkins, Edgar Reed, E. J. Neale, Samuel A. Bigelow, Josiah E. Bacon, Charles F. Dowse, Charles King, M. L. Bailey, John H. Coffin, Edwin L. Haley, John Spiers, L. F. Thurber, I. Frank Stevens, Wm. Chamberlain, T. B. Coles, Alex. N. Stanley, Robert N. Peck, C. N. Chevalier, Leon C. Carter, L. W. Thompson, F. F. Hodges, Francis B. Dana, E. E. Gallagher, L. H. Pease, Norman P. Cooley, H. N. Lathrop, Geo. W. Coleman, Peter Gray, George M. Gray, James N. Frye, Henry R. Pierson, Charles E. Dresser, E. Loring Richards, C. A. Earle, B. A. Hawley, D. Fletcher Barber, W. G. Bigelow, Charles A. Burditt, Charles M. Jarvis, James A. Monroe, Charles B. Parsons, Charles E. Wetmore, Joseph H. Williams, Nath'l L. Moore, E. H. Mansfield, D. Arthur Brown, Harry A. Brown, H. S. Hart, A. M. Wiley, W. M. Atwater, H. W. Marshall, M. A. Chandler, A. G. Bowman, F. M. Smith, John H. Sayward, S. C. Fischer, F. J. Brown, Dr. J. F. Worcester, Fred. W. Brown, Wm. Q. Wales, J. D. Keith, Hobart Frost, F. L. Johnson, M. McBarron, W. H. Bense, Charles F. Malley, P. F. Burke, Thomas F. Doherty, Hayward C. Dodge, John T. Chase, Charles H. Parker, Allan J. Chase, L. B. Morris, Wm. C. Merrill, Albert H. Inman, Thomas T. Booth, Frank E. Brigham, Walter C. English, J. D. Sargent, James Denny, C. L. Titus, W. A. Rice, Luther Little, Chas. S. Clarke, George P. Bullard, Wm. M. Horne, Josiah N. Bacon, Wm. H. Bacon, Arthur C. Harvey, Charles F. Bragg, H. W. Hayes, E. P. Sanderson, Robert E. Hofer, Harry L. Doten, Henry Prentiss King, J. Bradford Hunter, John T. Boyd, Charles E. Stumcke, M. B. Damon, George H. Wightman, Wilbur Sargent Locke, John E. Woods, Harry W. Waite, A. H. Ranlett, Wm. A. Jackson, Albert C. Ashton, Roswell H. Boutwell, Wm. P. Hill, George H. Mulhall, Wm. G. Angell.

PACIFIC HARDWARE & STEEL COMPANY.

THE PACIFIC HARDWARE & STEEL COMPANY, San Francisco, Cal., and New York, who January 1, 1902, absorbed Geo. W. Gibbs & Co. and Miller, Sloss & Scott, have just issued a handsome monograph relating to their new store in San Francisco, built by them just as they wanted it, and completed about 18 months ago. It is both unique and elegant, and was designed, illustrated and written by the mail order department. In the 48 pages, 9 x 8 inches, a comprehensive idea is given of the numerous departments of the establishment as well as exterior views of the store, the five stories and basement of which cover a site 137½ x 137½ feet at the corner of Mission and Fremont streets, their several warehouses being also shown. The engravings illustrating the establishment usually occupy part of the page, some being the full size of page, and are printed in a dark green tint on fine coated paper with accompanying letterpress description. An attractive feature is a series of subsidiary side and corner illustrations in delicate brown half-tones of scenes

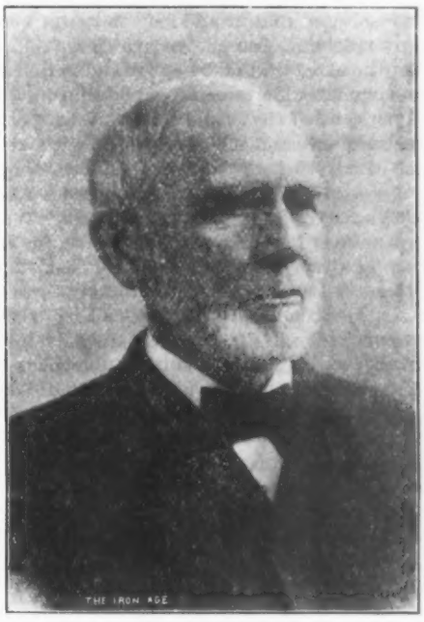
and show places in and about San Francisco. At the back are five full-page plans of the various floors, showing in detail the relation of all departments to each other, the arrangement of balconies on the first, second and fifth floors being printed in brown to clearly differentiate them from the floors proper.

This house are represented by 50 traveling salesmen in every State and Territory of the Pacific Slope, and in British Columbia, Alaska, Mexico and South America, as well as the Hawaiian Islands, Australia and the Orient, we are told, while through the efficient service of their well organized mail order department they obtain a large trade from territory not so visited. What this book shows indicates some of the great development in modern merchandising.

DEATH OF EDWARD P. BEALS.

EDWARD P. BEALS, senior member of the firm of Beals & Co., Buffalo, N. Y., died at his home of pneumonia, April 9, after a short illness.

Mr. Beals was born in Canandaigua, N. Y., March 16, 1821, and was the son of John W. and Julia R. Beals.



EDWARD P. BEALS.

He was educated in the schools of Canandaigua and the Buffalo Military Academy, beginning his business career as a clerk in the Hardware store of S. F. Pratt & Co. in 1836, and has been engaged in the Iron and Hardware business ever since. Mr. Beals was married in 1848 to Mary Lorenz of Pittsburgh, who died in 1886, and is survived by one son, Pascal P. Beals, and four daughters. Although naturally of a modest and retiring disposition, Mr. Beals has always been an active, public spirited citizen, and long regarded as one of the most prominent men in the Iron and Steel business in that section, being also well and favorably known throughout the country. He was an active partner in the firm of Pratt & Co. from 1846 to 1886, and had been the head of the present firm of Beals & Co., their successors, since their organization, his partners being his son, named above, Charles P. Rogers, Eugene J. McCarthy and Samuel C. Pratt.

The business originally operated by Pratt & Co. and afterward under the title of Pratt & Beals was conducted at the old Weed store at the corner of Main and Swan streets from 1836 to 1850, when, owing to largely increased trade and inadequate facilities for handling it, the establishment was moved to the present large quarters, at 44-50 Terrace. The older generation will remember when the firm of Pratt & Co. were one of the largest business houses in their sphere.

The death of Mr. Beals will not interfere with the management of Beals & Co., as he had arranged for his estate to remain in the business, which will be continued by the surviving partners.

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HARDWARE FACTORY COST SYSTEMS.

WE present below extracts from some suggestive letters from manufacturers in regard to the subject of costs in Hardware factories. They indicate the interest with which the subject is regared by manufacturers generally, our correspondents representing some of the largest in the country, as well as others occupying a less prominent position. The way in which the whole subject presents itself to them is indicated in the brief summary we give of the views expressed more fully in the letters which follow:

IMPORTANCE OF THE SUBJECT.—Factory costs, as a matter of prime importance, should receive more attention than is given to it by many manufacturers.

IGNORANCE OF COST.—Much disturbance in the trade and ruinous competition frequently result from lack of knowledge of costs.

COST OF EACH ARTICLE.—In general the cost of each article should be known, and not merely the profit resulting from the business as a whole.

A DIFFICULT TASK.—In some lines this detailed and accurate knowledge is difficult, if not impracticable.

RECORDS.—In connection with a careful system there should be records properly classified which can advantageously be consulted.

FIXED CHARGES.—A sufficient estimate should be made for fixed charges, whether the factory is running or not.

MINOR EXPENSES.—Many small expenses aggregating considerable sums are often left out of the account.

COST OF COST SYSTEMS.—In the endeavor to ascertain costs some manufacturers have been known to use cumbersome and expensive systems.

METHODS.—Information is given in regard to methods pursued and principles followed by manufacturers.

ELEMENTS OF COST.—Some detailed and suggestive enumerations are made of the various elements which enter into the cost of Hardware products.

SMALL FACTORIES.—The difficulty which attends the subject of cost in small factories or in those making a great variety of small articles is pointed out.

GOODS BELOW COST.—The opinion is expressed that many Hardware articles are sold at less than cost.

NEW LINES.—Manufacturers taking up new lines often cut the price without regard to profits. Such side lines are, however, leading lines with some other manufacturers.

AN INDIVIDUAL PROBLEM.—Each manufacturer in so complicated and varied a field as Hardware must work out his own system.

DISCUSSION.—To aid manufacturers in improving their methods a discussion of the whole subject in its various phases is important.

INFORMATION.—There is a very general desire for more information in regard to the principles which should be followed and the methods by which costs can be ascertained with the best results and the least labor.

LETTERS FROM MANUFACTURERS.

From a Western Manufacturer: We wish to say that we thnk one of the greatest causes for low prices is the lack of knowledge on the part of manufacturers in not knowing what their goods actually cost to manufacture and place upon the market to sell. They fail to realize the possible aggregate in dollars and cents of the multitude of little expenses that enhance the cost of any individual article to a greater extent than was anticipated, or was even left out of consideration altogether.

Ignorance of Cost

Every manufacturer should not fail to keep track of all expenses, both for manufacturing and selling; have them classified in a proper manner, which would be applicable to the individual business which they are prosecuting, and then beyond that a liberal estimate should be made for certain fixed charges that go on just the same whether the factory is in operation or not. This is an item that is often lost sight of, and when not fully taken into consideration makes the manufacturer's goods apparently cost less than they really do.

Fixed Charges

We will look with much interest for what will appear in your paper on this subject, and we trust it may do much good.

From a Manufacturer in New York State: I would now state that the question of the cost of goods we feel is a very important one. We ran our business for several years before we knew the exact cost of the goods. We always kept accounts, but every year we came out short. Our method was to charge everything to our factory and give the factory credit for the goods produced, but, as stated before, at the end of the year we came out short, and sometimes several thousand dollars. We figured over this some time before we could discover just where the trouble was, but there are many things that enter into the cost of goods that cannot be anticipated or seen in advance. We kept at this until we discovered the trouble was we had not added enough for incidentals—items that would not show up beforehand. We finally reached a percentage, which we add and that will cover the extra cost above labor and material, so that at present we are able to come out within less than one-half of 1 per cent. of the actual cost. We are positive that many manufacturers are selling goods without knowing what the goods cost them. For instance, the price of ——— ——— at the present time is at least 10 to 15 per cent. below actual cost of making the goods. We know of one manufacturer this year that sold nearly his entire output before he discovered that he was losing money. We believe the only true way for a manufacturer to know the actual cost of his goods is to treat his factory as if they were an outside company, giving them credit for the goods they turn out, and charging them with everything furnished. In this way, at the end of the year, they can tell for a certainty just what their goods have cost. Many manufacturers estimate the cost and we know of some that figure that material costs $1.50, labor 50 cents, so the article costs $2; but the real facts are it did cost 10 to 15 per cent. more than that. Such people fail in time, but it makes hard competition for those who are trying to make money.

Selling Under Cost for Years

Charges for Incidentals

From the Manufacturer of a Leading Line: The edge of competition would be very much dulled if all competitors knew the exact cost of their product. Their ignorance of cost is the seat of the trouble. Too often they guess at it, or if they make an effort to figure cost, fail to cover all items.

I have figured cost myself for a period of more than 25 years, and in doing so start with a knowledge that part of the cost of goods begins in the office; the office rent, clerk hire, heat, light, postage, printed matter—all make a starting point. The bare cost of material is not sufficient; it must be unloaded from the car, perhaps carted to the shop, and it cannot be done for nothing. Every time material has to be handled some one has to be paid for it. The engineer, fireman, fuel, water, repairs on engine and boilers and line shafting all enter into cost. The use of the machines adds considerable, for many of the machines have dies or shears or parts which are expensive, which require repairs, and all wear out and must be renewed, and the cost of the goods made is increased by their use. If the manufacturer figures his fuel he may overlook the fact that his forge cost him something—his use of it, its repairs, the fire brick and their renewing. The little things begin at the office and they finally end at the office after the goods are shipped.

Elements of Cost

Every time any part of an article is handled or touched some one must pay for it. It is the lack of knowledge of this that leads many sellers to underestimate cost or to not estimate it at all, and thus to lower prices, to the loss of the maker and injury of every competitor. Such items as insurance, taxes, cash discounts, exchange and advertising all are essentials in

any manufacturing business, and the product of the shops must pay for them in some way, and the cost of these should be equitably distributed among the different articles made. A manufacturer will fail to succeed if he thinks he can make his profit by buying his material so much lower than his competitor can, or by selling his product higher (unless it is noticeably better) than his competitor can, and with these facts before him he should strive to know exact cost of doing business and the cost of every article, and on it set a fair margin.

Knowledge of Exact Cost

From a Manufacturer in New York State: It is extremely difficult to preserve any accurate estimates as to the costs of a great many kinds of goods. There is such a large number of items which should properly enter into and be considered that there must be many times a case of "jumping at" conclusions. With large concerns, employing men by the hundreds and having adequate office force, it should be comparatively easy to keep reasonably accurate records in a Cost Department, but in small factories, where, say, less than 50 men are employed and the business done is of a relative proportion, ordinarily the expense of maintaining a Cost Department is not warranted. If the members of the firm or officers of the corporation, as it may be, cannot look after these things themselves, no other provision is likely to be made.

Costs in Small Factories

It cannot be doubted that most of the ruinous competition in many lines is the result of failure to consider costs by manufacturers. Most of the trouble is made by newcomers in the market, who, assuming that there must of necessity be a profit in the goods, make a slight cut in the price then ruling in order to get the business. Then manufacturers who have lost trade will make a still further cut to regain the business, and so the thing goes from bad to worse. It will always be found that the cutting is done by the new and inexperienced men rather than by the older and larger concerns. We are sure that if you can instill into the minds of the manufacturing class the absolute necessity of keeping a fairly accurate account of their costs on the articles they make, the result would be beneficial beyond estimate to all those in the business.

Benefits of Discussion

From a Massachusetts Manufacturer: We have never been what we term "faddists" in regard to factory costs, for we think that some people carry it to excess. We have in mind one company that did this thing so minutely a few years ago that it failed them, according to the writer's view of it. In our works we do not use very many cards or accountants. We have been in the manufacturing of our line of goods so long that we know what each machine is capable of doing, and it depends upon the price of the boy or man on the machine what it costs, and the amount of work has to vary according to the ability of the man on any particular job. We watch the daily product—that is, the completed goods—and we do not believe that any kind of system would make much difference. Of course we can see where we could keep track of costs closely and expend a great deal of effort on the system, but where we would save something we would perhaps be spending more. We can see that if we were making a variety of goods and we were going to make a lot this month and not again for several months we would have to do differently.

There May be Too Much System

From a Pennsylvania Manufacturer: The subject of factory costs is of much importance, and not having our own system arranged to our entire satisfaction, we shall be interested in a discussion of the subject. Your editorial covers the ground quite thoroughly in its statement of the ill effects arising from ignorance on this vital point, and also the difficulties of the small manufacturers who feel unable to maintain the expense of a proper system, although it is a question if this expense is not really profitable in the end. Competition may be the life of business, but too often it is the death of it, and it seems to us that if manufacturers generally would exert the same amount of energy in attempting to make a profit from their business as they do in trying to see how low they can sell their goods there would be little need for consolidations, combinations, &c. We certainly do not recommend the cheating of our customers, but at the same time we should not cheat ourselves by underestimating cost.

Expense of Cost System Justified

From a New England Manufacturer: We believe that there is one point you have overlooked in regard to the lack of knowledge of the correct costs being the cause of the unnecessary competition. The point we wish to make is that when some manufacturer has built up his business on some article or line with which he is familiar, and then, desiring to do an increased business, starts out to make some other article without much regard as to whether he has an improvement in the way of making or in the article itself, but simply with the idea to make something, the result, we believe, is very apt to be that in order to get the trade he is obliged to cut prices, and having the old line, which comprises the greater part of his business and is paying him well, to fall back on, he does without knowing it sell his new article at an actual loss, although his business as a whole may pay him a profit. The result of this is often seen in his failure when he tries to branch out too extensively. Almost any one connected with manufacturing can recall many instances of this kind.

Taking Up a New Line

In the latter instance it does not do the general trade as much harm, because when it results in a failure the cause of the trouble is soon removed. In the other instance, however, what one manufacturer may consider a side line is to some one else the article upon which his reputation and business have been founded, and it is pretty hard work for him to compete with the other man, who is selling the goods at a loss and can continue in business because of the profits he makes on the other lines.

Selling Below Cost Injures Some One

We are inclined to think that in the Hardware trade particularly, where there are so many kinds of small articles manufactured, if every manufacturer knew just how much each article cost him to make and sell there are a great many who would be surprised at the amount of business that they do at a loss. If the manufacturer is making but one article he can arrange his stock so that without much trouble he can take an inventory every month, and by that, in connection with accounts and bills due and accounts and bills payable, he can tell pretty close as to whether his business is being conducted at a loss or profit, instead of waiting until the end of the year as most people do. But this in the larger variety of articles would be hard to do, particularly to find out the loss or profit on each separate article. It is, in fact, impossible to get anything accurate owing to such items as power, salaries of superintendent and foreman, wages of tool makers and other employees not directly engaged in the manufacture of the articles themselves.

Many Goods Sold at a Loss

We trust that you may be able to obtain various points on this matter which will do something to help the condition of the Hardware trade.

TERRE HAUTE SHOVEL & TOOL COMPANY'S FIRE.

TERRE HAUTE SHOVEL & TOOL COMPANY, Terre Haute, Ind., sustained serious loss from fire in their plant on the 8th inst., their polishing, handling and finishing rooms being entirely destroyed. As the fire will probably prevent their being able to deliver any goods inside of 30 days, they advise their customers who may need any goods in their line during this period to secure them from other sources. In the mean time every effort will be made to get the plant in running order again so as to be in a position to furnish goods later on.

BRITISH LETTER.

Offices of *The Iron Age*, Hastings House, Norfolk St., London, W. C., April 4, 1903.

The Week's Hardware Trade.

SOME animation was lent to the metal industries this week by the quarterly meeting of the Birmingham iron trade. This, of course, affects the heavier sections. The Hardware section has been busy cleaning up outstanding orders for the Easter vacation. Special activity is just now being shown in Wrought Hollow Ware, Plain and Galvanized, particularly Watering Cans, Bowls, Kettles, Dustbins, Tanks and sanitary appliances, and prices in this branch have been advanced this week in consequence of the rise in spelter and the firmness of sheet iron. Bath and Toilet Ware and Traveling Trunks are selling freely, but otherwise the Tin Plate working branch is dull. Overseas account may be described as normal.

Galvanized Wrought Hollow Ware Association.

After being in a somewhat disorganized state, owing to the collapse of the association which formerly regulated it, the Galvanized Wrought Hollow Ware trade has been brought together again in an association. The whole of the arrangements are not yet completed, but the association has actually come into being during the last few days, and its first proceeding has been the revision of prices. This was taken in hand owing, among other things, to the increases which have recently taken place in the price of materials—spelter and iron and steel—and on most articles an advance has been declared. The uncompleted portion of the arrangements is in connection with the establishment of a "pool." This it is proposed shall take the usual form adopted by trade associations. So far about 40 firms in the Midlands have joined the association, and there are only one or two outstanding, and these it is hoped will ultimately be brought in.

Healthy Brass Casting.

One of the most interesting subjects of trade union work in this country during the last few years is the way in which trade union leaders concern themselves with the technical side of their clients' work. Thus we have W. J. Davis, secretary of the National Society of Amalgamated Brass Workers, addressing a crowded gathering of that society at the Birmingham Municipal Technical School on Lynes' process of brass casting. By the aid of excellent limelight views and a model of the new apparatus, he explained the working of the invention and its value as a means of carrying off the noxious fumes which rise from the molten metal. This is done by fixing on the crucible a hood attached to a flexible asbestos tube connected with a flue. This is so arranged as to allow of the metal being skimmed and poured into the mold without the fumes escaping. He claimed that the apparatus would do more than 20 Acts of Parliament to protect the health of the workmen, and to prove this he showed photographs of men working by the old method in such a thick atmosphere that they were hardly visible, and also of men doing the same work by the new process in an atmosphere so clear that their features could be easily distinguished. He also contended that the work could be done quite as quickly and much better with the patent appliance than in the ordinary way. Those who had tried said they would not be without it. It was a simple arrangement costing only a few pounds, whereas those founders who thought of the health of their workmen now spend hundreds of pounds on fans and flues without getting the desired result. The air became so thick after the molten metal had been poured into the molds in the old way that the men had to rush out of doors, thus endangering their lives in severe weather. He hoped that employers and employed would unite in urging the Government to make the adoption of the new process compulsory. If trade union leaders generally were to co-operate with employers in the technical development of their special trades how much pleasanter it would be all round.

A Great Directory.

I have received from Kelly's Directories, Limited, of 182 High Holborn, London, a copy of their "Directory of the Merchants, Manufacturers and Shippers of the World." The New York address of Kelly's Directories is Temple Court, 5 Beekman street. This is the seventeenth edition, the first having been published in 1877. It brings together in one volume not only the names of the manufacturers, merchants and exporters of Great Britain and her Colonies, but those of the more important foreign merchants, whether exporters to or importers from Great Britain, and further, those of the manufacturers of the principal goods imported into Great Britain. As a compendium of the names of manufacturers, merchants and exporters who directly or indirectly trade with Great Britain, this directory should be upon the shelves of every American manufacturer and exporter.

Development in the Far East.

Toward the end of last year I wrote very fully in these columns upon the development of the Trans-Siberian Railway. Since then Monsieur Witte, the Russian Minister of Finance, has been all over the new railroad and has written an extensive report for the consideration of his Government. The interesting part, so far as American exporters are concerned, is that referring to the development of new ports. Just as the American railroads of yore created the towns and cities through which they passed, so in like manner the Siberian Railroad will create the ports to which merchandise must be sent. The full account of Monsieur Witte's journey over the Siberian Railroad will be found in the *Journal de St. Petersbourg*, in French. I append translated some parts of the report, particularly those referring to the new towns of Harbin and Dalny:

The town of Harbin, which almost from the commencement of the construction of the Manchurian Railways has been the principal administrative railroad center, is situated on the right bank of the River Sungari, at a point where the main line of the Chinese Eastern Railway divides into two parts, one going to Dalny and the other to Port Arthur. The situation of this town is a particularly favorable one, standing as it does in the center of Manchuria, with the railroads which traverse the country radiating from it, and on a navigable river which waters nearly the whole of Manchuria. Anticipating that the town would become a commercial and industrial center of great importance, the railway administration took steps from the very beginning to obtain the greatest possible extent of land, and at the present time the area covered by Harbin and its future suburbs is 3500 dessiatines (9450 acres, or about 14½ square miles). Barely five years ago the site on which the town stands was a desert spot. At the present time the three parts into which the town is divided contain 20,000 inhabitants. M. Witte goes on to enumerate the steps taken to encourage the development of Russian industrial establishments at Harbin, and concludes by expressing his conviction that the town would, owing to its exceptionally favorable position, shortly become a great commercial and industrial center.

Dalny is the terminus of the southern branch of the Chinese Eastern Railway. This town is destined, says M. Witte, to become the most important commercial port for the Far East. The idea of establishing an important trading center at this place—*i. e.*, at the terminus of the Chinese Eastern Railway and on the shore of the Yellow Sea, which is free from ice—dates from 1898. The port, which is admirably situated on the Gulf of Talienwan and adequately sheltered from the winds and from severe storms, will when various improvements are completed form a part of Victoria Bay, surrounded with an artificial barrage (moles and breakwaters), having an area of 430,000 square sagènes (square sagène equals 5.44 square feet), about the same size as the port of Odessa. The basin will be deepened in its widest part to 28 feet, which will suffice for the largest steamships, and the rest of the basin will have a depth of 18 feet to accommodate coasting vessels. There is reason to believe that these works will be finished in about a year.

Further on in his report M. Witte urges that, while Russian traders should be attracted to Dalny, the establishment of commercial relations with other countries should also be encouraged in every possible way.

In conclusion M. Witte refers to the changes which are already becoming very apparent in economic conditions in the Far East through the construction of the Siberian Railway and of its latest link, the Chinese Eastern Railway. Prior to this the Trans-Baikal, as well as the Province of the Amoor, had a commercial and industrial existence of its own, quite foreign to the commercial and industrial interests of Russia.

The smallness of its population and the absence of any industries rendered absolutely unproductive and useless from a fiscal and economic point of view the maintenance of a customs protection of so extended a frontier. The only possible trade route was by way of Lake Baikal.

Up to the time of the construction of the Siberian Railroad the commercial situation was as follows: The ports of the Russian littoral on the Pacific Ocean and the most important among them, Vladivostock and Nicolaevsk, enjoyed the advantages of free ports. By their agency the Russian colonies established for the most part on the maritime littoral, on the banks of the Amoor and its affluents, were provided with foreign goods, and importations by the land frontier on the Chinese side consisted of Chinese products exclusively, such as tea and silk, &c.

New Improvements in the Spanish Province of Biscay.

Toward the close of last year the "Diputacion Provincial," or County Council, of Biscay, formed a Consultative Committee on Agriculture, whose object is to encourage the employment of artificial manures, the introduction of modern machinery and farming implements and the improvement of seeds, plants and live stock. A model farm has been established at Durango, where various experiments have been made and the results communicated to the different municipalities throughout the province, who are in their turn asked to recommend to local farmers the use of such samples as have been found most suitable, and to collect orders for their supply at cost price. As soon as sufficient orders are transmitted to the "Direccion del Servicio Agricola," at the "Diputacion," in Bilbao, the quantity required is advertised for in the *Gazette*.

The results of the system since it came into operation in November last are said to be promising, the distributions amounting to 400 tons of chemical manure, 15,000 kg. (15 tons) of seeds and 200,000 plants and trees of various kinds. Five other model farms are being established and a depot will probably be formed in Bilbao.

In machinery there is an opening for Plows (the Bravant double type), Harrows, Root Slicers, Hand Thrashers and Cultivators. Communications should be addressed to the "Direccion del Servicio Agricola," Diputacion de Vizcaya, Bilbao.

Prospects in China.

We have heard very little lately of the Chinese commercial treaty. It may be remembered that it consists of two parts, one settling a variety of detailed business matters and the other dealing wholly with likin. The first section is in effect a separate treaty between Great Britain and China, with which other nations have little or no concern. It comes into effect on January 1 next. Clause 8, however, which refers to the likin, is on a wholly different footing, for it was agreed that before it came into force the other powers having treaty with China must accept the provisions agreed to. Most of the other powers are in negotiation with China on the subject, and Germany, Japan and the United States have substantially accepted this part of the treaty, but they look upon the 12½ per cent. granted to the Chinese in lieu of import duty and likin as too high. They are therefore bargaining for 10 per cent. No doubt the Chinese Government will haggle as long as possible, but the advantage of a substantial accession to the revenue under the new system will in the long run induce them to give way. Meantime British exporters interested in the Chinese trade are watching the situation with close attention, and are obtaining all the information they can. One of the best authorities is W. Holland, formerly British Consul at Swatow. He has recently been lecturing before the London Chamber of Commerce upon trade prospects in China, and the hints he gives, while intended primarily for British exporters, can be equally taken to heart by American traders. After pointing out the vagaries in the right of exchange and the fact that Great Britain at the present moment does about 66 per cent. of China's foreign trade, he remarked that this was not really so satisfactory as it appeared. In former years we had almost the whole of the trade to ourselves, and in 1896 our share was 72 per cent. We thus lost 6 per cent. in five years. At this rate we should soon be nowhere in the race unless energetic steps were taken to retain our share in the trade, which was capable of enormous expansion. The trouble was that while the British merchant in England knew very little about what the Chinese wanted, the Chinese knew less about what the foreigner could supply. What was required in China and Great Britain was an improved mutual knowledge of each other's wants and powers of supply. Toward this end he suggested a system of exhibitions. The Americans had a bill before their Senate now for starting an exhibition of American goods in Shanghai. Instead of one such exhibition in Shanghai, where the goods would only be seen by a limited number of China's millions, we should open these exhibitions at a half dozen of the busy marts in the country. The exhibitions should be in charge of intelligent young men sent out by the chambers of commerce or syndicates, to learn a certain amount of Chinese, as was done by the sewing cotton trade four or five years ago. It would be easy to find intelligent natives who could act as assistants and look after the exhibitions while the English superintendents were away traveling in the interior under passports, visiting other large towns, showing samples and distributing advertisements in Chinese. Many of our merchants sent out at considerable expense catalogues in English, but they only found their way into the waste paper basket. He did not think that the suggested exhibitions need interfere in any way with the interests of British merchants who were already established in the country. Consular officers knew very little as a rule about commercial methods and requirements, while merchants in England were equally ignorant of Chinese ways and requirements.

British Efforts in Russia.

London merchants are trying to promote a new commercial treaty with Russia, having for its basis the removal of some of the customs regulations and formalities which hamper trade. It is stated with some authority that the British and Russian Ministers concerned are agreed that something should be done to foster the present good commercial feeling between Great Britain and Russia. They regard the time as opportune in consequence of the tariff trouble between Russia and the United States. I am informed that many orders for gold mining machinery which would have gone to America have been placed in England in consequence of this dispute. Germany too has lost some of her trade with Russia as a direct result of having imposed heavy duties on Russian grain. All this plays into the hands of the English merchant, who is quite anxious to make hay while the sun shines. It is quite understood, however, that the treaty will not include any preferential tariff for British goods.

Trade in Bulgaria.

I have once or twice drawn attention to the prospects of improved American trade with Bulgaria. I remember about 18 months ago, after returning from a trip in that quarter, pointing to the shipping facilities which Americans had for capturing this region. Particulars are now to hand of the imports and exports of Bulgaria for last year. The imports exceeded $14,000,000. The greatest absolute increase in imports from any one country was in those from England, which amounted to a value of $3,043,000, being $289,000, or 9.3 per cent. more than in 1901, and $1,537,000, or 102 per cent. more than in 1900. The following table shows the value of the categories of imports relating to Metal Goods and Hardware in the year 1902, as compared with the two preceding years:

	1900. Francs.	1901. Francs.	1902. Francs.
Metals and metal manufactures (chiefly raw iron, sheet iron, Nails, &c.)	5,198,000	6,209,000	6,594,000
Machinery, Instruments and Apparatus (chiefly Agricultural Machinery and Implements, Sewing Machines and Tools)	2,786,000	4,474,000	3,900,000
Oils, Greases, Wax and products thereof (chiefly Olive Oil and Soaps)	1,829,000	3,438,000	3,060,000
Mineral Oils (chiefly Petroleum and Naphtha)	3,128,000	2,992,000	2,513,000

The total value of the exports was $20,000,000, being $4,150,000 or 25 per cent. more than in 1901, and $9,800,000 or 92 per cent. more than in 1900. The category of exports showing the greatest increase was cereals, and the greatest absolute increase in exports to any one country was in those to England, which amounted to a value of $4,850,000, being $1,700,000 or 54 per cent. more than in 1901, and $3,790,000 or 309 per cent. more than in 1900. It is evident from these figures that Bulgarian trade is increasing by leaps and bounds.

THE TRAVELING SALESMAN HIS METHODS AND CONTROL

BY SAMUEL MASTERS.

CHAPTER XIV.—Salesmen as Collectors.

As to the advisability of having salesmen make collections, there is a diversity of opinion. Many salesmen prefer to have nothing to do with the payment of accounts beyond seeing that the terms of sale are stated in the customers' copy of the order, thinking that they can keep on better terms with the trade if they do not have anything to do with the disputes regarding settlements. Many credit men also prefer to make collections without the assistance of the salesmen. This is particularly true of those men who are strict in their rulings and find the salesmen too often on the customers' side of a dispute. The credit side of the interest and discount account does not grow quite so rapidly when the salesmen make collections, and there may be to his mind too many credits. With a house that has a credit man who is apt to be too arbitrary it is better for the salesman to keep clear of all matters pertaining to collections and waive with the customer all responsibility for troubles which occur. He will thus possibly have a better understanding with his trade, though his position will not tend to support the credit man's policy.

That Salesman is the Best Representative

who can most thoroughly cover all the features of his employers' dealings with their customers. Consequently if the business is so arranged that the salesman can care for the account in all ways, from the taking of the orders to the final payment, he renders the best service. Even if it is necessary to give him positive instructions in detail regarding disputes or claims for allowance and hold him responsible for a strict adherence to them it is often better to let him care for all the details of the dealings with the customers. There is less danger of trouble when all the business is done personally than when the most ticklish part of it is done by mail, with all the consequent liability for misunderstandings.

Two Per Cent. Cash on Next Visit.

It makes it increasingly easy to collect if the salesman is permitted to allow a cash discount on all bills rendered since his last regular visit, say 30 days before. The inducement of the cash discount makes the dealer more willing to pay then. In fact he is usually more than willing to give the salesman his check, and thus save his 2 per cent. and receive in person the salesman's thanks for the payment. Then with the account clear he is in a mood to contract a new indebtedness and orders come easier.

It will pay the jobber to allow the extra time simply for the moral effect and the increased business he will gain. The readiness with which payments are made will help to compensate for carrying the account for the additional time, and he will gain an additional benefit in the way in which accounts are cleaned up.

Prevents Doubtful Claims.

It very often occurs that a dealer will present a doubtful claim when remitting by mail, in the hope that it will be allowed, and thus he will lay the foundation for trouble when a salesman on the ground could explain the dealer's error or show him the unfairness of his claim in a way that would forever settle it. After a claim is made in writing, no mater how wrong it may be, there is a natural reluctance to back down and this fact lies at the bottom of a great deal of the trouble regarding collections. In the give and take of a personal interview, where there is always more or less of skirmishing for an advantage, no offense is taken if a sufficient reason is given for declining to entertain a claim, and if it cannot be settled then, and the claim is just and is referred to the house by the salesman with his fair and honest opinion of the matter, it is easier for the people at home to make a decision.

Orders More Carefully Written.

One good effect of such a system is the extra care which the salesman takes to have the terms of sale thoroughly understood. If he has a personal interest in the settlement of the account he is the more likely to have no chance for error here. He will have the terms, delivery, freight equalizations, &c., carefully noted and take all possible pains to have everything straight and clear. Thus one frequent cause for misunderstandings is done away with.

Credits for Returned Goods.

The other causes for disputes and deductions can be largely governed by general rules issued by the salesman's employers. One of the most frequent and vexing is the question of returned goods. A dealer will make a mistake in ordering, and when the goods are received will send them back with no explanation; or he has ordered them for a customer who does not want them when they arrive; or he finds that the demand is not up to his expectations and he has more goods than he can sell; or it is something which he has carried in stock with the hope of selling, which he finds is not likely to be realized; or they arrive in bad order; or a competitor has quoted a better price—or any one of a dozen other things may have actuated the dealer in returning them. The more unjust his action is the less he is inclined to make any explanation or write for permission to return the goods before doing so. The ordinary jobber suffers more inconvenience and loss through this item than any other which touches his relations with his trade. Let him formulate rules which shall govern the return of goods and have them thoroughly understood by the salesmen: let it be made a fixed rule that no goods will be accepted or credited unless permission to return them is first obtained and the bill of lading for the shipment is accompanied with an invoice billing back the goods and stating clearly the date of the jobber's invoice on which they were first charged. Let this be made clear to the salesman, and see that he impresses it upon his customers. Have it understood that the only case in which the salesman can give authority to return goods is to correct an error in shipment by his house. Have him insist that all goods returned be in good order, and that if the jobber is not at fault the freight be prepaid, and that all shipments be plainly marked with the name of the sender. Let the jobber send to his customer a credit memorandum, which can be accepted by the salesman as applying on the account, and he can handle this question with comparative ease. He can indeed be of valuable assistance, for the claims for allowance for goods returned drag along at times in a most irritating fashion, and often can hardly be settled satisfactorily by correspondence. Where the customer is careless or unjust, putting the matter in the salesman's hands for adjudication in a personal interview will often save a great deal of time and temper on both sides.

Freight Allowances.

When according to the terms of sale there is a freight allowance to be made the salesman can get, while in the customer's store, the necessary vouchers for certifying to the amount to be credited. If freight is to be equalized with another jobbing point, he can ascertain the rate and figure the allowance, thus insuring its accuracy. If a question arises on which he has no explicit instructions he can refer it to the house more fairly and in a better shape for obtaining an equitable ruling than if the customer wrote direct.

An Addition to the Salesman's Burden.

It may be objected that the salesman has enough to consider in making the sales without troubling with the collections. It will not take much additional time. He has first of all to hear his customer's complaints in any event and at greater length than would be the case if he had to pass upon their justice. If there are no complaints it is not a long job to effect a settlement, and with all old scores cleared up he is in the best possible position for doing the maximum amount of business.

As to the handling of the money, there need be no fear of losses in this regard. Some of the jobbing houses insist upon their salesman giving an indemnity bond, taken out in one of the companies doing a business of this character, for which they themselves pay the premium. Strict rules against the use as expense money of payments made by customers and proper precautions against carelessness will cover all other ordinary contingencies. Receipts mailed by the jobber direct to the dealers will serve as a safeguard against errors or neglect on the salesman's part.

PREMIUMS FOR SALES BY JOBBERS' SALESMEN.

BY A SPECIAL CORRESPONDENT.

THE salesman making the smaller trade in the interests of the Hardware jobber has to-day probably a greater assortment and larger line of goods than any other class of traveling salesmen. His catalogue is a book of 1500 to 2000 pages, and generally he has a line of seasonable goods which he is selling for future delivery. It is therefore almost impossible for the general Hardware traveler to take the time to get himself posted or to interest his customer in any specialty.

One of the most prominent and largest manufacturers in a certain line realized that this was the case, but also knew that this particular line of goods could be best introduced and sold through the channels of the Hardware trade. Something new was recently brought out by this manufacturer. He knew the new article had merit and needed only to be shown to be sold. It had been extensively advertised but the orders were coming in slowly. To stimulate the sale this novel scheme was introduced: To each of the salesmen of the jobbing houses handling their goods who sold within a specified time a certain number of this new machine the manufacturer presented a suit of clothes. The scheme was a success.

A member of one of the progressive Boston jobbing houses said that the idea was good and had worked well. He said that his house had taken up the scheme with the idea that perhaps two or three of their star salesmen would get a new suit. The fact was that about all their men had new suits and some had another suit coming. The clothes were custom made, an order being given upon an up to date tailor.

REQUEST FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

E. T. Wenger has disposed of his stock of Hardware, Stoves, Paints and Oils, &c., in Eldorado, Ohio, to Skewman & Billman, who continue at the old stand. Mr. Wenger has entered the same line at New Castle, Ind., and requests copies of catalogues, price-lists, &c.

TRADE ITEMS.

AT the annual meeting of the Board of Directors of the Pacific Hardware & Steel Company, held in San Francisco, April 6, Chas. E. Miller, president of the company, presented his resignation as director and officer. His resignation was received with deep regret, and the secretary was instructed to prepare a resolution commendatory of the long and valuable services rendered by Mr. Miller to the company, and expressing their extreme reluctance at having him sever his connection and end his participation in the active management of the affairs of the corporation. The following gentlemen were elected officers: A. L. Scott, president; H. J. Morton, first vice-president; Joseph Sloss, second vice-president and treasurer; D. H. Kane, secretary.

THE trade will be pleased to know that Arthur Brittan of Arthur Brittan & Co., Chicago, who has been ill for some weeks, is again attending actively to business. He is now making a trip through the West in the interest of the various companies which he represents.

A. C. WILLIAMS of Ravenna, Ohio, manufacturer of Sad Irons, Toys and Novelties, has withdrawn from the consolidation known as the National Novelty Company, which was formed a short time ago. He was impelled to this action by reason of certain changes in the corporation. He believes, however, that the consolidation will be a good thing for the Toy industry, and he proposes to work in harmony with the company, although his business will be entirely independent from the combination. Very amicable relations exist between him and the new company, and although he declined to merge his plant with the confederated manufactories, his resignation as one of the vice-presidents of the company was returned to him.

THE LUTHER BROS. COMPANY, Milwaukee, Wis., have reorganized through the purchase of a $15,000 interest by James A. Sheriffs and Samuel Newman. The company have a capital stock of $50,000, and manufacture Hardware Specialties. The officers of the company, as reorganized, are: President, S. S. Newton; vice-president, C. J. Luther; secretary, James A. Sheriffs; treasurer, Samuel Newman.

ALFRED FIELD & Co., 93 Chambers street, New York, have recently been appointed sole agents in the United States by the Imperial Enamel Company, Limited, of Birmingham, England. The Imperial Company turn out advertising signs of every description lettered, and often elaborately printed on specially prepared enameled iron. They have had an experience of 45 years, and as time has gone on constant improvements and developments have produced some very artistic work. The plates are prepared by a secret process, and great durability is claimed for the signs. The company have recently furnished the street signs for Manhattan Borough, New York City.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich., whose New York office has been located at 103 Chambers street for 18 years, are about to move to 25 Warren street, in order to secure larger accommodations for conducting their business both as to carrying an adequate stock and properly equipping their repair department. They have the store floor and two basements each 85 x 25 feet. They will also have a larger salesroom and more commodious offices, while the territory is equally as convenient to the trade as the old stand.

HARPER & REYNOLDS COMPANY, Los Angeles, Cal., have favored us with a photograph which gives an impressive idea of the magnitude of their spring stock of Garden Hose. This shipment consisted of two carloads, making about 40 miles of Hose. Upon receipt of the Hose they loaded it in six large trucks, which, headed by a brass band, were paraded around the city as an advertisement.

THE VICTOR STAMPING COMPANY, Loveland (Cincinnati), Ohio, have incorporated with a capital of $50,000 for carrying on a general stamping business in Sheet Metal, manufacturing and jobbing of Tinned, Japanned and Galvanized Ware, and dealing in Tin Plate, Metals and Tinners' Supplies. The company's plant will be equipped with the latest improved machinery.

CALIFORNIA NORTH COAST HARDWARE DEALERS' ASSOCIATION.

ANOTHER divisional association has been formed in California, making the sixth in that State. The title of the new organization is North Coast Hardware Dealers' Association. The meeting at which the formation was perfected was held in Santa Rosa on the 25th ult. Merchants were present representing the trade between San Rafael and Ukiah and Vallejo and Calistoga. The attendance was large and the meeting was a most successful one. The officers of the new association are: J. C. Mailer, president; C. E. Haven, vice-president; Arthur DeW. Brown, secretary, and E. E. Morrow, treasurer. The Executive Committee comprises J. O. Gunn and M. H. Crossley, with president, secretary and treasurer as *ex-officio* members.

The following declaration of principles of the association was adopted:

The trade has long recognized the fact that a close relation must exist between the wholesaler and retailer, and that each has rights and equities which should be respected, thereby bringing beneficial results to the legitimate business. We, as retailers, cannot exist if we are forced to come into direct competition with the wholesaler. At the same time we desire it to be distinctly understood that it is not the object of this association to form any trust or combination which would act as a burden to the consumer, and it is not intended to encourage the schemes of any private individual, firm or corporation, but to consider and act upon all matters pertaining to the general welfare of the trade.

A number of the San Francisco wholesale houses were represented at the meeting by traveling salesmen.

DEATH OF J. WARREN SANDERS.

J. WARREN SANDERS died at his home in Champaign, Ill., Sunday, April 12, from the effects of a paralytic stroke of a few days before. Mr. Sanders was born at Laconia, N. H., in 1844, and early in his business career was connected with the Dover Stamping Company, Boston, Mass., from whence he went to the Lalance & Grosjean Mfg. Company, and later to the St. Louis Stamping Company, St. Louis, Mo., with whom he remained for 15 years, until 1900, when he located at Champaign, Ill., and started in business for himself. At the age of 17 he enlisted in Company I of the First Rhode Island Cavalry, serving three years in the War of the Rebellion. He was affiliated with the Colonel Nodine Post, G. A. R., and was a member of the Champaign Commandery, Knights Templars. He leaves a widow, daughter and son, the latter, Albert W., living in St. Louis. Services were held at his home in Champaign, the body being taken to Laconia for interment. He was a man of sterling qualities, good character and habits, straightforward, honest, and was highly esteemed.

PRICE-LISTS, CIRCULARS, &c.

THE EASTERN GRANITE ROOFING COMPANY, Irving Building, Chambers street and West Broadway, New York: Perfected Granite Roofing. A pamphlet, with a sample of the roofing attached, explains the advantages and uses of the company's product.

D. F. TANNER, Holland, N. Y.: Circulars illustrating duplex and coil Bolster Springs, Neck Yokes, Doubletrees, Singletrees, &c.

THE WHITMAN AGRICULTURAL COMPANY, St. Louis, Mo.: Whitman's Baling Presses are illustrated and described in a catalogue.

THE PIEDMONT HARDWARE COMPANY, Danville, Va.: Illustrated catalogue devoted to Guns, Rifles, Revolvers, Loading Tools, Ammunition, &c.

MISCELLANEOUS NOTES.

Walker's Improved Ice Cream Freezer.

The I. X. L. Ice Cream Company, Warren, Pa., are offering a power ice cream freezer operated by a driving shaft provided with fast and loose pulleys, adapted to freezing with calcium brine, cooled to a low temperature. It is designed to freeze cream expeditiously and on a relatively large scale. Each freezing apparatus includes two tubs resting on an iron tub carrier which works on a swing joint, so that while freezing is being carried on in the can of one tub the other can and its equipments can be put in readiness for use when freezing is completed in the first tub. Brine supply and drainage pipes are connected with the tubs.

Poultry Shears.

Krusius Bros., 296 Broadway, New York, and Solingen, Germany, are manufacturing a poultry shear of English steel, having long curved blades, the upper or cutting half being a plain blade, working against a lower blade with serrated edge of the character of saw teeth. It is 9½ inches long over all, has a volute spring in center and end loops to hold handles together when not in use. It can be supplied in all steel, and with either stag or pearl laid handles. All the metal parts are polished and nickeled, and the shear can be sold at a moderate price.

Ice Chipping Machines.

Schmidt Bros., Davenport, Iowa, who have for years manufactured sash, doors and blinds, have discontinued business in that line and will in the future manufacture ice chipping machines. The ice machine to be made is a new device, upon which patent has recently been secured and for which, since being placed on the market, a good demand is reported.

The Keystone Pipe Wrench.

The Hollands Mfg. Company, Erie, Pa., are offering the pipe wrench herewith shown. It is referred to as

The Keystone Pipe Wrench.

being strong and effective, as catching hold and letting go quickly, as being made of the best crucible steel forgings, carefully tempered, and as having few parts.

The Bowser Oil Outfits.

S. F. Bowser & Co., Fort Wayne, Ind., are offering the pumps and tanks shown in the accompanying cuts. In Fig. 1 the method of filling cans or jugs without the use

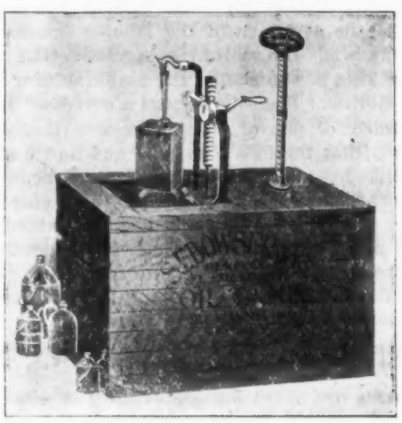

Fig. 1.—The Bowser First-Floor Outfit.

of measures is illustrated. By the connecting pipe furnished square cans or jugs may be filled with the same ease as an ordinary can, which is hung with the discharge directly in the opening of the can, as shown in the

cut. This represents the filling of a 10-gallon varnish can. When drawing oil at night, it is explained that a lamp is unnecessary, as the amount of oil drawn can be regulated by counting the strokes of the pump. A self measuring storage outfit is shown in Fig. 2, which is referred to as solving the problem of handling and storing all classes of oil. The oil may be stored in a tank either

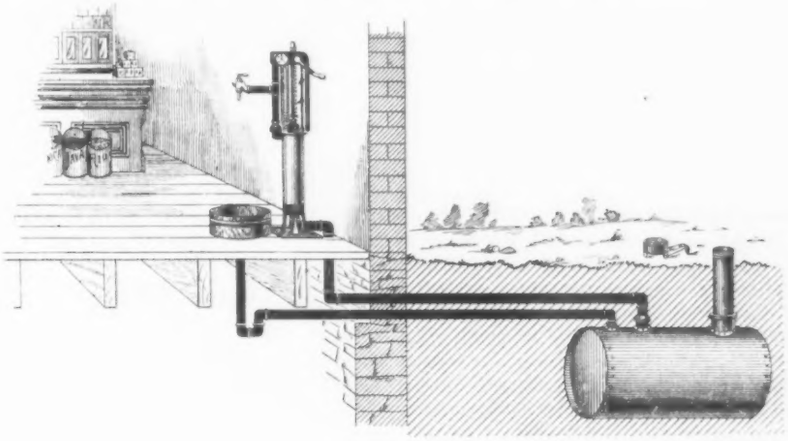

Fig. 2.—The Bowser Self Measuring Storage Outfit.

buried in the ground or located in an outbuilding any distance from the pump. Tanks to be buried are made cylindrical in shape, of heavy galvanized sheet steel, riveted and soldered. They are fitted with a lock filler cap with automatic ball valve air vent, the top of the cap standing somewhat above ground. Tanks that are not to be buried are made of heavy galvanized sheet steel, double seamed and soldered, incased in a cabinet made of lumber, grained and varnished. They are made any size desired and cased either singly or in compartments. The pumps are designed for handling paints, oils, varnishes and other nonlubricants. The outfits are referred to as clean and economical and as providing a satisfactory method of handling heavy and gummy oils and varnishes.

The Williams Fence Machine.

The accompanying cuts relate to a machine for fastening stays to wire fences with staples. The manner in which the machine is applied to a fence to curve the wires is shown in Fig. 1. The large handle of the machine is held level and at right angles with the fence,

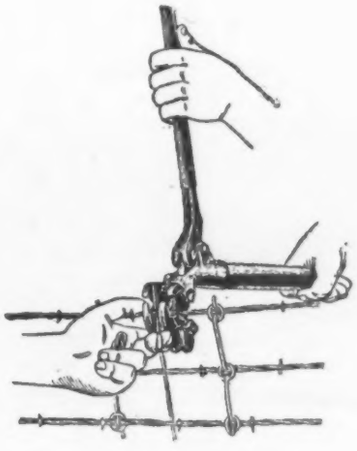

Fig. 1.—The Williams Fence Machine.

the work being done with the small handle. An assistant helps to steady the machine as shown in Fig. 1. Closing and opening the machine crimps both wires. In Fig. 2 the position of the hands of the assistant is shown in the act of dropping the staple into the machine after the wires have been crimped. After the staple has been dropped into the machine the operator tilts up both handles until the upper jaw comes squarely over the staple, when the closing of the machine completes the tie.

Fig. 3 illustrates the machine closed, completing the tie, and the left hand of the assistant steadying the wire in readiness for the machine to be applied to the next.

The machine is offered by the International Steel Post Company, St. Louis, Mo., who explain that it can be used

Fig. 2.—The Machine Ready to Make the Tie.

on both smooth and barb wire, or any of the patent wires, it being especially adapted to old barb wire fences in re-

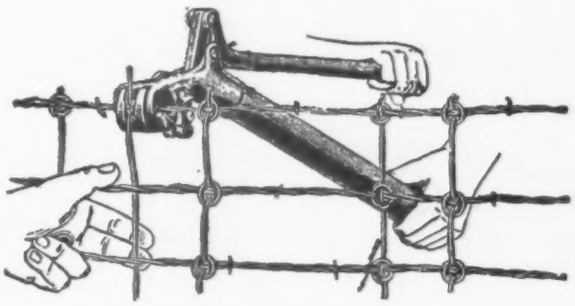

Fig. 3.—The Tie Made and the Stay Fastened in Place.

pairing them and placing stays to prevent the wires separating.

The partnership of Cowing, Robards & Cowing, Alexandria, Minn., dealers in Hardware and Farm Implements, has been dissolved, and the business reorganized as a stock company under the style of Cowing, Robards Company. The officers of the new company are John B. Cowing, president ; Oscar J. Robards, vice-president ; William T. Cowing, secretary and treasurer. This business was established by John B. Cowing and Oscar J. Robards in 1867.

Steel Pocket Calipers.

The Smith & Egge Mfg. Company, Bridgeport, Conn., represented in New York by J. J. Halpin, 62 Reade street,

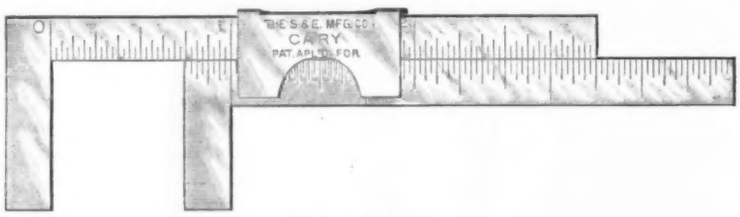

Fig. 1.—Steel Pocket Calipers.

are manufacturing the pocket calipers illustrated in Figs. 1 and 2. While not intended to compete with expensive tools of this character with close divisions for expert machinists, the graduations are accurate, and in a majority of instances will answer the purpose as well as the more expensive tools for ordinary use. The illustrations are actual size, and show but two of several ways or combinations in which the tool may be used. Both sides are graduated, one in sixteenths, the other in thirty-seconds.

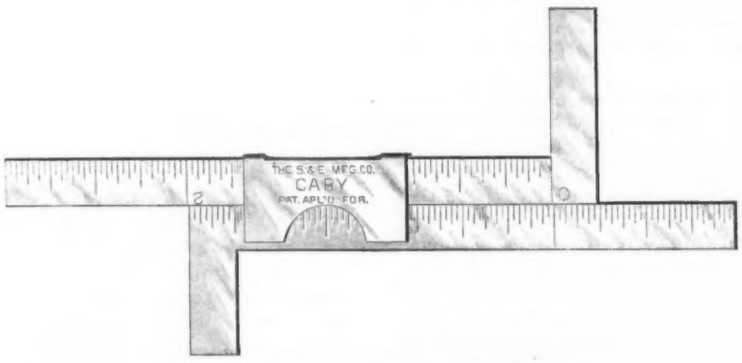

Fig. 2.—One of Several Ways of Using Caliper.

The tool is 3 inches long, and can be used to determine diameters and thickness of material, depth of holes; can be used as a square by readjusting the position of one arm, will give the bevel of a door, and there are a number of other uses which will readily suggest themselves. It is made of steel, polished and nickeled, and is intended for retailing at 25 cents each.

The New Wheeler Cooler Separator.

The illustration herewith given represents a gravity cream separator, offered by the Wheeler Gravity Cream Separator Company, Syracuse, N. Y. The milk is placed

The New Wheeler Cooler Separator.

in an inner can, and the water in an outer one. The arrangement is such that the milk can at any time be drawn off without disturbing the cream, while the water remains in the outer can. The inner can is made of heavy tin, painted, and the outer one is of galvanized iron. The faucet used to draw off the milk is of brass, nickel plated. A device with a large tube in the bottom is arranged by which the water can be quickly drawn off. The inner can can be removed quickly, as the faucet screws on like an ordinary thumb screw. The separator is supplied with or without a cover. When a cover is not desired, a tinned wire band is supplied with which to fasten on a cloth strainer.

The Friend Gasoline Power Sprayer.

The accompanying cut represents the gasoline power sprayer, including engine and pump, offered by the "Friend" Mfg. Company, Gasport, N. Y. The company furnish the wagon, tank and derrick, if desired. The capacity of the engine the company guarantee to be 2 horse-power, and the combined weight of the pump and engine as less than 500 pounds. It is explained that the engine is desirable

The Friend Gasoline Power Sprayer.

not only for spraying, but that it is useful at all times for running light farm machinery. The sprayers are designed for use by fruit growers, tree wardens, in parks, &c.

Current Hardware Prices.

REVISED APRIL 14, 1903.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Adamite in Carloads:
Crystal ₱ ton $90@100
Grain ₱ ton $120@140
See also *Emery*.

Adjusters, Blind—

Domestic, ₱ doz. $3.00 33⅓%
North's 10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent 25&5%
Tapiin's Perfection 25&5%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Armand Hammer, Wrought ₱ lb 8½@8¾c
Buel Patent Trenton ₱ lb 9½@9¾c
Eagle Anvils ₱ lb 7¼@7½c
Hay-Budden, Wrought 8c@9½c
Horseshoe brand, Wrought 9c@9½c

Imported—

Peter Wright & Sons ₱ lb 10½c

Anvil, Vise and Drill—

Millers Falls Co., $18.00 50&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz. 25%
Smaller Lots. 20%
Lots of 3 doz. 30%

Augers and Bits—

Com. Double Spur 70@70&10
Boring Machine Augers 66⅔@70%
Car Bits, 12-in. twist 60@60&10%
Jennings' Pattern
Auger Bits 60&10&5@60%
Ford's Auger and Car Bits 40%
Forstner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list 25&10%
No. 30. R. Jennings' List. 40&7½&10%
Russell Jennings' 25&10&2½%
L'Hommedieu Car Bits 15&10%
Mayhew's Countersink Bits 45%
Millers' Falls 50&10&7½%
Pugh's Black 20%
Pugh's Jennings' Pattern 35%
Snell's Auger Bits 60%
Snell's Bell Hangers' Bits 50&10%
Snell's Car Bits, 12-in. twist 60%
Wright's Jennings Bits (R. Jennings' list) 50%

Bit Stock Drills—

Standard List 65&5@70%

Expansive Bits—

Clark's small, $15; large, $26 50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18 50&10%
C. E. Jennings & Co., Steer's Pat. 25&10%
Swan's 60%

Gimlet Bits—

Common Double Cut..gro. $2.50@3.00
German Pattern.....gro. $4.00@4.25

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames 25&10%
New Patent 25&10%
Universal 20%
Wood's Universal 25%

Ship Augers and Bits—

Ford's 40%
Snell's 40%
C. E. Jennings & Co.:
L'Hommedieu's 15&10%
Watrous' 33⅓&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.00
Unhandled, Shouldered.gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. $1@1.1c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, factory brands...$6.00
First Quality, jobbers' brands...$5.50
Second Quality.....$5.00@5.25

Axle Grease—See *Grease, Axle.*

Axles— *Iron or Steel*

Concord, Loose Collar.... 4½@5c
Concord, Solid Collar.... 5¼@5½c
No. 1 Common.... 3¾@4 c
No. 1 Com. New Style... 3¼@4 c
No. 2, Solid Collar.... 3¼@4½c
Nos. 11 to 14....60&10&10@70%
Nos. 15 to 18..... %
Nos. 19 to 22.....70&10&5%
%Cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. lb. 4½@4¾c
Common and Concord, turned.... lb. 5@5¼c
Half Patent.... lb. 9@9½c

Balances— Sash—

Caldwell new list 50%
Pullman's 60%

Spring—

Spring Balances....50&10@60%
Chatillon's:
Light Spg. Balances. 40&10%
Straight Balances. 40%
Circular Balances 50%
Large Dial. 30%
Pelouze 50%

Barb Wire—See *Wire, Barb.*

Bars— Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 5@5¼c

Towel—

No. 10 Ideal, Nickel Plate ₱ gro, $8.50
No. 20 Ideal, Brass Finish ₱ gro $8.50

Baskets—

Hoffman's Brick Baskets. each $3.25

Beams, Scale—

Scale Beams, List Jan. 12, '85.40&10%
Chattillon's No. 1 30%
Chattillon's No. 2. 40%

Beaters— Egg—

Lightning Chain, ₱ doz, $1.15; ₱ gro.... $12.00
National Mfg. Co.: ₱ gro.
No. 1 Dover, Family size $7.00
No. 2 Dover, Hotel size 14.00
Taplin Mfg. Co.: ₱ gro.
No. 69 Improved Dover $6.50
No. 75 Improved Dover $7.50
No. 75-2 Imp'd Dover, Tin'd 8.00
No. 100 Improved Dover 8.00
No. 102 Improved Dover, Tin'd $9 50
No. 150 Improved Dover, Hotel $15.00
No. 152 Imp'd Dover, Hotel, T'd $17.00
No. 200 Imp'd Dover Tumbler 9.00
No. 202 Imp'd Dover Tumbler, Tin'd $10.00
No. 300, Imp'd Dover Mammoth, ₱ doz 27.00
Wonder (S. S. & Co.) ₱ gro. $6.00

Bellows—

Blacksmith, Standard List. 70@70&10%

Blacksmiths'—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each..	*$3.50*	*3.75*	*4 25*	*4.80*	*5.35*	*6.15*

Extra Length:

Each..	*$4.00*	*4.55*	*5.10*	*5.60*	*6.40*	*7.50*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$4.75*	*5.2)*	*5.75*	*6.25*	*7.00*	*8.00*

Net Prices.

Bells— Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey 75&10%
Texas Star 50%

Door—

Abbe's Gong 45%
Barton Gong 55%
Home, R. & E. Mfg. Co.'s 55&10%
Lever and Pull, Sargent's ....60&10&10%
Yankee Gong 35%

Hand—

Hand Bells, Polished....60&5@60&17%
White Metal 55@55&10%
Nickel Plated 50@50&5%
Swiss 60@60&7½%
Cone's Globe Hand Bells 33⅓&33⅓&10%
Silver Chime 33⅓&33⅓&10%

Miscellaneous—

Farm Bells..... lb. 2@2½c
Steel Alloy Church and School.....60%
American Tube & Stamp'g Co. Gongs 70%
Trip Gong Bells 55&10@60%

Belting— Rubber—

Agricultural (Low Grade).75&10@80%
Common Standard.....75@75&10%
Standard 70@70&10%
Extra 60&10&5%
High Grade..... 50&10@50&10&5%
Boston Belting Co.:
Seamless Stitched Imperial..... 45&5%
Boston 50&5%
Niagara 60&5%

Leather—

Extra Heavy, Short Lap...60@60&5%
Regular Short Lap 60&10@60&10&10%
Standard 70@70&5%
Light Standard 70&10%
Cut Leather Lacing 60&10%
Leather Lacing Sides, per sq. ft..18c

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $3.75; No. 2, $6.50; No. 3, $9.50; No. 4, $14.75; No. 5, $18.75.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—

Common Wooden.....70@10@75%
Hollow Steel Blocks, with Ford's Patent Sheaves 50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c..... 30&10%

Bolts—Carriage, Machine &c.—

Common, list Feb. 1, '02....60&10@..%
Norway Iron, $5.00, list Jan. 1, '98 80@80&5%
Phila. Eagle, $3.00 list May 24, '99.... 80@80&5%
Bolt Ends, list Feb. 14, '95...65&5@..%
Machine, list Oct. 1, '99.....65@..%
Machine with C & T. Nuts..... 60&2½@..%

NOTE.—*Jobbers are in many cases underselling the manufacturers.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.57*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel...75&10@75&10&10%
Wrought " Bronzed.40&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door 60%

Stove and Plow—

Plow ..... 60@..%
Stove..... 30@30&10%

Tire—

Common..... 72½@72½&10%
Norway Iron..... 80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '34..... 80%
Eagle Phila., list Oct. 16, '84..... 82½%
Bay State, list Dec. 28, '99..... 74½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..... 80%
Eagle Phila., list Oct. 16, '84..... 82½%
Eclipse, list Dec. 28, '99..... 72½%
Russell, Burdsall & Ward Bolt & Nut Co.
Empire, list Dec. 28, '99..... 72½%
Norway Phila., list Oct. '84..... 80%
Upson Nut Co.:
Tire Bolts..... 72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.30*	*5.00*	*5.75*	*7.25*
Inch.....			*2¼*	*2½*
Per Doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each..... 25%

Boxes, Mitre—

C. E. Jennings & Co..... 25&10%
Langdon..... 15&10%
Schatz..... 40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American...$1.15@1.25
Barber's..... 50&10&10@60&10%
Fray's Genuine Spofford s..... ....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414..... 60%
C. E. Jennings & Co..... 50&5&10%
Mayhew's Ratchet..... 60%
Mayhew's Quick Action Hay Patent..50%
Millers Falls Drill Braces..... 25&10%
P. S. & W. Co. Peck's Patent 60&10@65%

Brackets—

Wrought Steel.....75&10@80%
Bradley's Wire Shelf:
Full cases..... 80&10&10%
Broken cases..... 80&10%
Griffin's Pressed Steel..... 80%
Griffin's Folding Brackets..... 70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co..... 75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks Saw—

Hoosier..... ₱ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—

Wrought list Sept., '96.....30@30&5%
Cast Brass, Tiebout's..... 50%

Cast Iron—

Fast Joint, Broad.....60@50&10%
Fast Joint, Narrow..... 60@50&10%
Loose Joint..... 70&5@70&10%
Loose Pin..... 70&5@70&10%
Mayer's Hinges..... 70&5@70&10%
Parliament Butts..... 70&5@70&10%

Wrought Steel—

Table and Back Flaps.....60%
Narrow and Broad.....60%
Inside Blind.....66&10%
Loose Pin..... 60&10%
Loose Pin, Ball and Steeple Tip..... 75%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts..... 45&20@45&25%

Extra 25&10 @25&10&10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series..... 5%
1200 series..... 33⅓%
200, 300, 600 and 900 series..... 40&10%
Hendryx Bronze:
700, 800 series..... 40&10%
Hendryx Enameled..... 40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 4@4½c
Sharp, 1 prong.....per lb. 4½@4½c
Perkins' Blunt Toe..... ₱ lb 3½c
Perkins' Sharp Toe..... ₱ lb 4 c

Cannons—

Breech Loading, 32 cal. Cartridge, Toy Cannons.....per doz. $2.00

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 50	2.00	2.25	each.
Iowa Pattern...	....	2.35	2.50	each.
	20	30	40	qts.
New York Patt'rn	1.65	2.40	2.75	each.
Baltimore Patt'rn	....	1.80	2.00	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	120.00 gro

Caps—Percussion—

Eley's E. B......*60c*
G. D......*per M 32@34c*
F. L......*per M 42@..c*
G. E......*per M 47@50c*
Mushet.....*per M 62@..c*

Primers—

Berdan Primers, $1.00 per M.....5%
B. L Caps (Sturtevant Shells) $1.00 per M.....5%
All other primers per M.$1.22@$1.27

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10c&5%
38 C. F., $7.00.....10c&5%
22 cal. Rim, $1.50.....1c&5%
32 cal. Rim, $2.75.....10c&5%
B. B. Caps, Con..Ball Swgd.....*$1 90*
B. B. Caps, Round Ball.....*$1.40*
Central Fire.....25%
Target and Sporting Rifle.....15c&5%
Primed Shells and Bullets.....15c&10%
Rim Fire Sporting.....50%
Rim Fire, Military.....15c&5%

Casters—

Bed.....70@70c&10%
Plate.....60@60c&5%
Philadelphia.....75@75c&10%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Jobbers' Shipments:

3-16	¼	5-16	⅜	7-16	½	9-16
8.50	6.00	4.90	4.00	3.80	3.70	3.65
⅝	¾	⅞	1 to 1¼ inch.			
3.60	3.55	3.50	3.40	per 100 lb.		

German Coil.....60c&10c&10%

Halters and Ties—

Halter Chains.....60c&10@60c&10c&10%
German Halter Chains, list July 24, '97.....60c&10c&10@70c&10%
Cow Ties.....50c&10@60%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$27.00
6½—6-2, Straight, with ring..$28.00
6½—8-2, Straight, with ring..$33.00
6½—10-2, Straight, with ring..$37.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains..60@60c&10%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60c&10@60c&10c&10%
Brass.....60c&10@60c&10c&10%
Safety Chain.....70c&10@75c&5%
Gal. Pump Chain.....*lb. 4@4¼c*
Covert Mfg. Co.
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@45&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter.....45@50&5%
Niagara Coil and Halters.....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Wire Dog Chains.....45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl-Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....*gro. 40@45c*
Carpenters', Red.....*gro. 35@40c*
Carpenters', White.....*gro. 30@35c*
See also Crayons.

Checks, Door—

Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Fit)) Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....70@70c&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70%
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers.....40c&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181.....16⅔&10%
L. & I. J. White, Tanged.....35&5%

Cold—

Cold Chisels, good quality.lb. 13@15c
Cold Chisels, fair quality...lb. 11@12c
Cold Chisels, ordinary.....*lb. 8@9c*

Chucks—

Beach Pat., each $8.00..*.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard...30%
Drill Chucks, New Model.....25%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....25%
Universal Lathe Chucks.....40%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Car Drill.....30%
Geared Scroll.....30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%
Wescott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....40%
Little Giant Double Grip Drill.....40%
Little Giant Drill, Improved.....40%
Oneida Drill.....40%
Scroll Combination Lathe.....40%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....50%
Carriage Makers' Sargent's.....60%
Besly, Parallel.....33⅓&10%
Linemans, Utica Drop Forge& Tool Co.40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....40%

Sidewalk—

Star Socket, All Steel....₱ doz. $4.05 net
Star Shank, All Steel....₱ doz. $3.24 net
W. & C. Shank, All steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
P., S & W.....50@50&5%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company

'98 Chicago Horse	$8.75
1902 Chicago Horse	$10.75
Lightning Belt	$15.00
Chicago Belt	$20.00
Stewart's Patent Sheep	$18.50

15%

Clips Axle—

Eagle and Superior ¼ and 5-16 inch.....70c&10%
Norway, ½ and 5-16 inch..70@70c&10%

Cloth and Netting, Wire

—*See Wire, &c.*

Cocks, Brass—

Hardware list:
Compression and Plain Bibbs.....65c&5@65c&10%
Globe, Kerosene, Racking, &c., Cocks.....65c&10@70%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Walter B. Stevens & Son's list.40%
Embossed, Gilt, Walter B. Stevens & Son's list.....30&10%
Leather, Walter B. Stevens & Son s list40%

Combs Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses Dividers, &c.

Ordinary Goods.....75@75c&5%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....35&10%

Compressors Corn Shock—

J. B. Hughes' ₱ doz.....$2.50

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
Eastern....	75c&7½%	75c&2½%
Central....	75c&2½%	70c&15½%
Southern..	70c&7½%	70c&2½%
S. Western..	65c&10c&10%	65c&10c&5%

Terms, 2% for cash. With delivery on full crates.
See also *Eave Troughs.*

Coolers, Water—

Gal. each.	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal....	2	3	4	6	8
Galv. Lined Ea.	$1.35	$2.00	$2.25	$2.90	$3.90

25%

Ga.v. Lined side handles Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab.....*lb. 25c*
Braided. White, Com.... *lb. 17½@18c*
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....*lb 9 @9¼c*
Cotton Sash Cord, Twisted....12@16c
Patent Russia.....*lb. 12½@13c*
Cable Laid Russia.....*lb. 13½@14c*
India Hemp, Braided.....*lb 14@15c*
India Hemp, Twisted.....*lb. 10@12c*
Patent India, Twisted.....*lb.10@12c*
Anniston Cordage Co.:
Old Glory, Nos. 7 to 12.....₱ lb 24 ¢
Anniston, Nos. 7 to 12.....₱ lb 19 ¢
Old Colony, Nos. 7 to 12.....₱ lb 18½¢
Anniston Drab, Nos. to 12.....₱ lb 24 ¢
Pearl Braided, cotton.....₱ lb 17½¢
Massachusetts, White.....₱ lb 22½¢
Massachusetts, Drab.....₱ lb 26½¢
Eddystone Braided Cotton.....₱ lb 19¢
Harmony Cable Laid Italian.....₱ lb 18¢
Ossawan Mills:
Crown, Solid Braided White...₱ lb 22¢
Braided, Giant, White.....₱ lb 20¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₱ lb 32½¢
Braided, Italian Hemp....₱ lb 32½¢
Braided, Linen.....₱ lb 49¢
Braided, White Cotton, Spot.₱ lb 28½¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢.....15%
Linen, 57½¢.....15%

Wire, Picture—

List Oct.,'00.....85c&10@85c&10c&5%

Crackers, Nut—

Little Giant,..*.....₱ gr. $24.00

Cradles—

Grain.....50%

Crayons—

White Round Crayons, gross.5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons.gr. $2.50
Soapstone Pencils, round, flat or square.....gr.$1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Crooks, Shepherds'—

Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt. Medium Knives.....₱ doz. $3.00
No. 77 Medium Knives.....₱ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz... $3.00 10.75 14.50
American.....30%

Nos.	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	10	12	22	33
Each	$2	$3	$2.75	$4.50 $6

Dixon's, ₱ doz.....30&10&40%

Nos..	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $92.75.....50&10%
Little Giant, ₱ doz.....33⅓&5@40%

Nos.	305	310	312	390	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....40%
Sterling.....40@40&10%

No. 1....	$2.00	each	No. 2...	$2.50	each

New Triumph No. 605, ₱ doz. $24.00..
30&10@40%
Woodruff's, ₱ doz.....30&10@40%

Nos....	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 13.....40%
Sterling, $6.00 each.....33⅓%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$30

Tobacco—

All Iron, Cheap.....*doz. $4.25@$4.50*
Enterprise.....25@50%
National, ₱ doz. No. 1, $21; No.2, $18..40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's No 12 and 21.....60&10%

Washer—

Appleton's, ₱ doz. $16.00.....50&10%
Bonney's.....40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers, ₱ doz.....$6.75
Iwan's Perfection Post Hole Digger... ₱ doz. $8.50
Iwan's Split Handle Post Hole Diggers, ₱ doz.....$7.50
Kohler's Universal..... ₱ doz. $15.00
Kohler's Little Giant..... ₱ doz. $12.60
Kohler's Hercules..... ₱ doz. $10.00
Kohler's Invincible..... ₱ doz. $9 60
Kohler's Rival..... ₱ doz. $8.50
Kohler's Pioneer..... ₱ doz. $7.50
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, ¾ in.....₱ doz, $10.50
Phillips', style 077, ¾ in. .....₱ doz, $8.00
Phillips', style x-y, ⅝ in.....₱ doz, $11.00
Porter's Plain, No. 6.....₱ doz. $6 75
Porter's Ornamental, No. 70. ₱ doz. $10.50
Porter's No. 99.....$9.00
Porter's No. 44.....$10.75

Drawers Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding..$3.75@4.00
Breast, Millers Falls.....15 c10%
Breast, P., S. & W.....4 0&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16⅔&5&10%
Johnson's Drill Points.....16⅔&5&10%
Millers Falls Automatic Drills...33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W.....50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Standard List.... 60c&10@60c&10c&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drivers, Screw—

Screw Driver Bits..per doz. ..45@75c
Baisey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet.....35%
Goodell's Auto50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21.....25&10%
Millers Falls, Nos. 11, 12, 41, 42.....15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....60%
Nos. 20 and 40.....70%
Smith & Hemenway Co.....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles30@60&10&'10%
No. 86.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....30&10&10%

Eave Trough, Galvanized

Territory. L. C. L.
Eastern.....80c&7½%
Central.....80c&2½%
Southern.....75c&10c&5%
S. Western.....75c&10c&2½%
Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Elbows and Shoes—

Factory shipments.....60%
Perfect Elbows (S. S. & Co.).....30%

Emery, Turkish—

	4 to 4½	5 to 150	Flour
Kegs.....*lb.*	5c	5½c	3½c
½ Kegs.....*lb.*	5½c	5¾c	3¾c
Kegs.....*lb*	5c	6c	

10-lb cans.10 in case.6½c 7c 6c
10-lb.cans,less than 10.10c 10c 8c
NOTE.—*In lots* 1 to 3 *tons a discount of 10% is given.*

Extractors, Lemon Juice

—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....50%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50@50c&10%
*Metallic Key, Leather Lind*70@70c&10%
Red Cedar.....50c&10@50%
Petroleum.....70c&5@70c&10%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined....50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection Cedar.....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¼ and ⅜ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36..40&10%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.
Best Brands.....70c&5@70c&10%
Standard Brands.....75@75c&10c&5%
Second Quality.....75c&10c&10@80c&5%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....30%

Fixtures, Grindstone—

Net Prices:

Inch....	15	17	19	21	24
Per doz.	*$2.60*	*2.75*	*3.00*	*3 50*	*4.40*

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....60&10&10%
Stowell's Giant Grindstone Hanger.... ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light.... 60&10%

Fodder Squeezers—

See *Compressors.*

Forks—*Aug. 1, 1899, list.*

Hay, 2 tine 60%
Hay 3 tine ..... 60&10%
Hay, 4 tine ..... 60&5%
Hay, Header and Baler 3 tine ..... 60&15%
Hay, Header and Baler, 4 tine ..... 60&5%
Grain or Barley 70%
Manure, 4 tine ..... 60&20%
Manure, 5 and 6 tine ..... 60&20%
Spading ..... 70&5%

Extra 10%

Iowa Dig-Ez-y Potato 65%
Victor, Hay ..... 60%&5%
Victor, Manure ..... 60%&5%
Victor, Header ..... 60%&5%
Champion, Hay ..... 60%&5%
Champion, Manure ..... 60&20%
Columbia, Hay ..... 60%&5%
Columbia, Manure 70%
Columbia, Spading ..... 70&10%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&20&10%
Acme Manure, 6 tine ..... 60%&10&2%
Dakota Reader ..... 65&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Reader ..... 60%&5
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—*See Spoons.*

Frames— Saw—

Red, Polished and Varnished..doz. $1.15@$1.35
White ..... *doz.* 75@80%

Freezers, Ice Cream—

Qts...	*3*	*4*	*6*	*8*	*10*
Best	$1.55	1.65	1.95	2.40	3.20	4.20
Good	$1.25	1.40	1.70	2.15	2.75	3.75
Fair	$1.00	1.10	1.30	1.75	2.30	2.99

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp Fuse $3.60
Cotton Fuse 2.90
Single Taped Fuse 3.25
Double Taped Fuse 4.20
Triple Taped Fuse 5.00

100&7½%

Gates, Molasses and Oil—

Stebbins' Pattern ..... 80@80&10%

Gauges—

Marking, Mortise, &c. ..... 50&10@50&10&10%
Fulton's Butt Gauge ..... 30&10%
Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 20@20&10&10%
Wire, Brown & Sharpe's 35%
Wire, Morse's 35%
Wire P., S. & W. Co ..... 30&10%

Gimlets— Single Cut—

Nail, Metal, Assorted, gro. $1.40@1.60
Spike, Metal, Assorted gro. $2.80@3.25
Nail, Wood Handled, Assorted. gro. $1.75@2.00
Spike, Wood Handled, Assorted gro. $3.25@3.50

Glass, American Window

Jobbers' List, Dec. 16, 1902.
From store, Single and Double 90&10%
F. O. B. factory, carload lots:
Single and Double ..... 90&20&2½%
2000 box lots ..... 90&25%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts) 33⅓@48%
List C, Cans (½ gal., gal.) ..... 25@45%
International Glue Co. (Martin's) ..... 40&10@50%

Grease, Axle—

Common Grade ..... *gro.* $5.00@6.00
Dixon's Everlasting....10-₱ pails, ea. 85¢
Dixon's Everlasting, in bxs..₱ doz. 1 ₱ $1.20; 2 ₱ $2.00

Griddles, Soapstone—

Pike Mfg. Co ..... 33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder $6.50
Bicycle Grindstones, each ..... $2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. $2.00
Pike Mower Knife and Tool Grinder, each $4.00
} 33⅓%
Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

Halters and Ties—

Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 40&5&2%
Sisal Rope ..... 20&2%
Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope halters 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties ..... 60&10%

Hammers—

Handled Hammers—

Heller's Machinists'..40&10@40&10&10%
Heller's Farriers ..... 40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40@40&10&10%
Peck, Stow & Wilcox 50%
Fayette R. Plumb:
Plumb, A. E. Nail..33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand ..... 50&7½&2%
Machinists' Hammers ..... 50&5
Riveting and Tinners' ..... 50&10&5%
40&2½@40&10&2½%
Sargent's C. S. New List 40%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c } 75&5@75
3 to 5 lb.....lb. 36c } &10%
Over 5 lb.....lb. 30c }
Wilkinson's Smiths'.....9½c@10c lb.

Handles—

Agricultural Tool Handles—

Axe, Pick, &c. ..... 45@50&5%
Hoe, Rake, &c. ..... 60@60&5%
Fork, Shovel, Spade, &c.:
Long Handles 60%
D Handles 50%

Cross-Cut Saw Handles—

Atkins' ..... 40&5%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—

Auger, assorted.....*gro.* $2.30@2.50
Brad Awl ..... *gro.* $1.25@1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@2.35; *large,* $2.50@2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@2.20; *large,* $3.50@3.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; *large,* $2.60@2.25
Hickory Socket Firmer, gro. ass'd. $1.60@$1.75; *large,* $1.75@$2.00
Hickory Socket Framing, gro. ass'd. $2.50@2.75; *large,* $2.65@2.85
File, assorted.....*gro.* $1.00@1.15
Hammer, Hatchet, Axe, &c. 50%
Hand Saw, Varnished, doz. 70@75c
Not Varnished.. ..... 55@60c
Plane Handles:
Jack, doz. 25c; *Jack Bolted*..55@60c
Fore, doz. 35@38c; *Fore, Bolted*.. 70@75c
Millers Falls Adj. and Ratchet Auger Handles ..... 15&10%
Nicholson Simplicity File Handle, ₱ gro. ..... $0.35@$1.50

Extra 5@10% often given.

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Single Doz.	$0.85	1.20	1.50	1.90	2.30

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Single Doz.	$1.10	1.60	2.15	2.70

Alith Mfg. Co.
Reliable ..... per doz. $15.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Cronk & Carrier Mfg. Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%
Lane Bros. Co.:
Parlor, Ball Bearing $4.15
Parlor, Standard $3.35
Parlor, New Model $2.85
Parlor New Champion $2.25
Barn Door, Standard. 50&10&10&5%
Covered ..... 50&10&10%
Special ..... 50&10&10&5%
Lawrence Bros.:
Advance 50%
Cleveland ..... 60&10%
Crown 60%
Giant ..... 50&10%
New York 60%
Peerless ..... 60&10%
Sterling 60%
Swing, No. 95 ..... 50&10%
Union, No. 44, $5.00: No. 45 $7.00; No. 46, $9.00.
McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%
Hinged Hangers, $16 ..... 50%
Meyers' Stayon Hangers. 50&10% (net)
C. S. Smith Mfg. Co.:
Lundy Parlor Door ..... 50&10%
Monarch Barn Door ..... 60&10%
Never Jump Hinge ..... 50&10%
Peerless ..... 60&10%
Perfection ..... 70&5%
Phœnix ..... 70&5%
Wagner's Adjustable ..... 70&10%
Warehouse Anti-Friction 60%
Richards Mfg. Co.:
Pioneer Wood Track No. 8 ..... $2.25
Imp'd Wood Track No. 5 ..... $2.25
Imp'd Steel Track No. 7 ..... $2.70
Imp'd Steel Track No. 7 ..... $2.65
Ball Bear'g Steel Track No. 9 ..... $2.50
Ball Bear'g Steel Track No. 10 ..... $2.50
Roller Bear'g Steel Track No. 11 ..... $2.45
Roller Bear'g Steel Track No. 12 ..... $2.40
Ball Bear'g Steel Track No. 13 ..... $2.75
Roller Bear'g Steel Track No. 14 ..... $2.65
Ball Bear'g Trolley Track No. 15 ..... 40%
Ball Bear'g Trolley Track No. 19 ..... 40&5%
Ball Bearing Tandem Trolley Track No. 16 ..... 40%
Silent Adjustable Track No. 18 ..... 40%
Auto Adjustable Track No. 22 ..... 40%
Trolley B. D. No. 17 ..... $1.60
Trolley F. D. No. 120 ..... $2.70
Trolley F. D. No. 121 ..... $2.85
Trolley F. D. No. 151 ..... $3.00
Roller Bearing D. D. No. 25 ..... 70&5
Roller Bearing U. S. B. D. ..... 70&5%
Anti Friction B. D. ..... 60&10%
Ives' Wood Track No. 1 ..... $2.15
Ives' Imp'd Wood Track No. 2 ..... $2.15
Stowell Mfg. and Foundry Co.
Acme Parlor Ball Bearing 40%
Atlas 60%
Badger Barn Door 50%
Baggage Car Door 50%
Climax Anti-Friction 50%

Extra 5@10% often given.

Elevator 40%
Express 50%
Interstate 60%
Lundy Parlor Door 50%
Magic 50%
Matchless 60%
Nansen ..... 60&10%
Railroad 50%
Street Car Door 50%
Steel, Nos. 300, 404, 500 ..... 40&15%
Stowell Parlor Door 50%
Wild West, Nos. 300, 404, 500 ..... 5%
Zenith for Wood Track 50%
A. L. Swett Iron Works:
Eagle ..... 60&10%
Hylo ..... 50&10%
Perfection 60%
Pilot 60%
Taylor & Boggis Fy Co. 50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L. T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Velvet 50%
Wilcox Auditorium Ball Bearing. 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Elv. Door, Nos 122 and 122½. 50%
Wilcox Elv. Door, No. 132 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox O. K. Steel Track 50%
Wilcox O. K. Trolley 50%
Wilcox Trolley Ball Bearing 40%
Wilcox Wideman Narrow Gauge Ball Bearing 40%
For Track, see *Rail.*

Extra 5@10% often given.

Hangers, Gate—

Myers' Patent Gate Hangers, ₱ doz., net, $4.50

Hasps—

McKinney's Perfect Hasp ₱ doz..... 50%

Hatchets—

Best Brands ..... 50@50&10%
Cheaper Brands ..... 60@60&10%
Note.—Net prices often made.

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	$0.85	1.75	3.50

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1¼*	*2*	*2½*
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter, (Buffalo, &c.)

No.	*1*	*1¼*	*2*
Doz. pair	$0.75	.70	.65

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Parker ..... 70@75%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5, 11 & 13 ..... 70&10@70&20%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 7 &5%
Acme, Lull & Porter 75%
Queen City Reversible 75%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75%
Shepard's Double Locking, Nos. 20 & 25 ..... 70%
Champion Gravity Locking, No. 75..75%
Steamboat Gravity Locking, No. 10. 75%
Pioneer, Nos. 060, 45 & 5½ 75%
Empire, Nos. 101 & 103 ..... 70%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with Latches	$2.00	2.70	5.00
Hinges only	$1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch ..... *doz* ....@$2.50
Without Latch ..... *doz.* ....@$1.80
Reversible Self-Closing:
With Latch ..... *doz.* ....@$1.80
Without Latch ..... *doz.* ....@$1.45
Western:
With Latch ..... *doz.* $1.80
Without Latch ..... *doz.* $1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Spring Hinges—

Holdback, Cast Iron, gro. $6.50@10.50
Non-Holdback, Cast Iron gro $7@7.50

J. Bardsley
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer Ball Bring Floor Hinges 40%
Bommer Spring Hinges 40%
Chicago Spring Butt Co.:
Chicago Spring Hinges 25%
Triple End Spring Hinges 50%
Chicago (Ball Bearing) Floor Hinge 45%
Garden City Engine House 25%
Keenan's Saloon Door 25%
Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass ..... 20&5%
American 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable, No. 7, ₱ gr. $12.00
Gem, new list 30%
Clover Leaf ..... ₱ gr. $12.50
Oxford, new list 30%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $9.50
Lawson Mfg. Co.:
Matchless 35%
Matchless Pivot 45%
Shelby Spring Hinge Co.:
Crown Jamb Hinge 40%
Chief Ball Bearing Floor Hinge. 45%
Royal Ball Bearing Floor Hinge. 45%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges 70%
Heavy Strap Hinges ..... 75&10%
Light T Hinges ..... 60&5%
Heavy T Hinges ..... 60&5%
Extra Heavy T Hinges 75%
Hinge Hasps 55%
Cor. Heavy Strap ..... 75&10%
Cor. Ex. Heavy T 75%

Extra 2½&10&10% @25&10&10&10%

Screw Hook and Strap:
6 to 13 in ..... *lb.* 3½c
14 to 20 in ..... *lb.* 3¼c
22 to 36 in ..... *lb.* 3 c
Screw Hook and Eye:
¾ to 1 inch ..... *lb.* 5 c
⅝-inch ..... *lb.* 6 c
½-inch ..... *lb.* 7 c

Miscellaneous—

Hoffman's Steel Spring Butt Hinges ..... 40&10%
Hoffman's Offset Refrigerator Hinges ..... 40&10%

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers 25%

Hods, Coal—

	15 inch.	*16*	*17*	*18 inch.*
Galv. Open	$2.50	2.75	3.00	3.25 ₱ doz.
Jap. Open	$2.00	2.25	2.50	2.75 ₱ doz.
Galv. Funnel	$3.00	3.25	3.50	3.75 ₱ doz.
Jap. Funnel	$2.50	2.75	3.00	3.25 ₱ doz.

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar ..... each $1.45
Steel Brick ..... each $1.10
Hoffman's:
Brick ..... each $1.10
Mason's ..... each $1.00
Plasterers' ..... each $3.20

Hoes— Eye—

Scovil and Oval Pattern ..... 60&10@60&10&10%
Grub, list Feb. 23, 1899..... 70@70&10%

Handled—

Aug. 1, 1899, List:
Garden ..... 70&10%
Meadow & Rhode Island 75&2½%
Southern Meadow ..... 75&5&2 %
Mortar and Street ..... 75&7½%
Planters', Regular Pat'n. 70&30%
Cotton ..... 75&7½%
Toy, Ladies', Boys', Onion, Turnip, Berry or Tobacco. 70&10&5%

Extra 50%

Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Cotton Hoe ..... 75&7½%
Ft. Madison Crescent Cultivator Hoe, per doz ..... 75&10%
Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $5.00
Junior Size ..... ₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. $4.00
Ft. Madison Dixie Tobacco Hoe. 75&20%
Kretsinger's Cut Easy ..... 70&10%
Warren Hoe 60%
W. & C. Ivanhoe ..... 75&2%
B. B. Cultivator Hoe ..... 75&10&2%
Acme Weeding ..... 75&10&2%
W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00 ..... 45&10%

Door—

Empire 50%

File and Tool—

Nicholson File Holders and File Handles 33⅓%

Hooks— Cast Iron—

Bird Cage, Reading 60%
Bird Cage, Sargent's List 60%
Ceiling, Sargent's List ..... 40&10%
Clothes Line, Hoffman's ..... 40&10%
Clothes Line, Reading List ..... 65&10@65&10&10%
Clothes Line, Sargent's List. 50&20&10%
Coat and Hat, Sargent's List ..... 45&10%
Clothes Line, Stowell's 70%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Wrightsville 65%
Harness, Hoffman ..... per doz. 35&40¢
Harness, Reading List ..... 70&10@75%

Wire—

Belt 80%
Wire C. & H. Hooks 60&10@60&10&10%
Atlas, Coat and Hat:
Single Cases 55%
10 Case Lots ..... 50&10%
Czar Harness ..... 50&10&5%

Wire Coat and Hat:
Acme 60%
B. B 60%
V Brace, Chief and Czar 60%
Gem 60%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton ..... doz. $1.05@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50
Grass .....Nos. 1 2 3 4
Best $1.50 1.75 2.00
Common .. $1.30 1.50 1.40 1.60
Potato and Manure ..... 66⅔&20%
Whiffletrees ..... lb. 5½c
Hooks and Eyes:
Brass ..... 60&10&10@70%
Malleable Iron ..... 10&5&70&10%
Covert Saddlery Works' Self Locking Gate and Door Hook 60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $5.25 net
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse Horseshoes—*

See *Shoes, Horse.*

Hose Rubber—

Garden Hose, ¾-inch:
Competition ..... ft. 4¼@ 4¾c
3-ply Standard ..... ft. 6 @ 6½c
4-ply Standard ..... ft. 7½@ 8 c
3-ply extra ..... ft. 8½@ 9 c
4-ply extra ..... ft. 10½@11 c
Cotton Garden, ¾-in., coupled:
Low Grade ..... ft. 6 @7 c
Fair quality ..... ft. 8 @9 c

Irons— Sad—

From 4 to 10 ..... lb 2¾@3c
B. B. Sad Irons ..... lb. 3@3¼c
Chinese Laundry ..... lb. 4¾@5c
Chinese Sad ..... lb. 3¾@4c
Mrs. Potts', per set:

Nos.	50	55	60	65
Jap'd Tops	71c	71c	84c	81c
Tin'd Tops	77c	74c	87c	84c

New England Pressing, lb.. 3¼@3¾c

Pinking—

Pinking Irons ..... doz. 50@60c

Soldering—

Soldering Coppers 2¼ and 3 .. 18@19
1½ and 2 ..... 20@21c
Covert Mfg. Co ..... 20&2%

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw ..... 30&5%
Steel ..... 45&2%
Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%
Lockport 50%
Lane's Steel ..... 30&10%

Kettles—

Brass, Spun, Plain ..... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c 30%
Hartzell Cutlery Co 50%
Smith & Hemenway Co ..... 40&10%
Hay and Straw—See *Hay Knives.*

Corn—

Withington Acme, ₱ doz., $2.65; Dent, $2.75; adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List ..... 70&5@70&10%
Brailey's 4
C. E. Jennings & Co. Nos. 45, 46 ..60&10%
Jennings & Griffin, Nos. 51, 52, 60&10&10%
Swan's ..... 70&10&2½%
Watrous ..... 16⅔&10%
L. & L. J. White ..... 20&5@25%

Hay and Straw—

Lightning ..... ₱ doz. $6.50@7.00
Iwan's Sickle Edge ..... ₱ doz. $10.00
Iwan's Serrated ..... ₱ doz. $10.00
Maine ..... ₱ doz. $8.50

Mincing—

Buffalo ..... ₱ gro. $13.00

Miscellaneous—

Farriers' ..... doz. $2.00@3.00
Wostenholm's ..... ₱ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... $1.10@1.20
Carriage, Jap, all sizes .. gro. 25@30c
Door, Mineral ..... doz. 65@70c
Door, Par. Jap'd ..... doz. 70@75c
Door, Par. Nickel .. doz. $2.05@2.15
Bardsley's Wood Door, Shutter, &c ..15%
Picture, Sargent's ..... 60&10%

Lacing Leather—

See *Belting Leather—*

Ladders Step Etc.—

Lane's Store 25%
Myers Noiseless Store Ladders 30%

Ladies— Melting—

L. & C. Mfg. Co 25%
P. S. & W 50%
Reading 60%
Sargent's ..... 45&10%

Lanterns— Tubular—

Regular Tubular No. 0 doz. $4.35@4.75
Lift Tubular .. No. 0 .. doz. $4.75@5.25
Hinge Tubular, No. 0 .. doz. $4.75@5.25
Other Styles ..... 40@10@40@10@45%

Bull's Eye Police—

No. 1, 2¾ inch ..... $2.50@2.75
No. 2, 3 inch ..... $2.75@3.00

Latches— Gate—

Hoffman's Safety Gate ..... ₱ doz. 60c

Thumb—

Roggin's Latches, with screw .. doz. 35@40c

Leaders Cattle—

Small ..... doz. 55c; large, 60c
Covert Mfg. Co ..... 45&2%

Lifters, Transom—

R. & E. 33⅓%

Lines—

Wire Clothes, Nos...	*13*	*19*	*20*
100 feet	*$2.20*	*2.00*	*1.65*
75 feet	*$1.80*	*1.70*	*1.30*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 3 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 10%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr 30%
Anniston Waterproof Clothes, 50 lt., ₱ gro., $22.00; Gilt Edge, $30.00; Air Line $20.00; Acme, $15.00; Alabama, $15 00; Empire, $13.50; Advance, $13.50; Alliston, $11.50; Calhoun, $10.00; Oriole, $20.00; Albermarle, $25.50; Eclipse, $11.00; Chicago, $10.00; Standard, $9.00; Columbia, $8.00.

Locks— Cabinet—

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]
Reading Hardware Co 50%
R. & E. Mfg. Co 40%
Sargent & Co ..... 40@40&10%

Elevator—

Stowell's 40%

Padlocks—

Wrought Iron ..... 75&10&5@80&5%
R. & E. Mfg. Co. Wrt. Steel and Brass ..... 75@75&10%

Sash, &c.—

Ives' Patent.:
Bronze and Brass ..... 55&7½%
Crescent 50%
Iron ..... 60&2½%
Wrought Bronze and Brass ..... 50&5%
Wrought Steel 55%
Reading ..... 60&10&10&70%

Machines— Boring—

Com., Upright, Without Augers .. $2.00
Com., Angular, Without Augers .. $2.25
Without Augers.

R. & E. Mfg. Co.:	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2 3.38
Improved No. 5	2.75	
Jennings'	No. 4, 3.15	No. 1, 3.50
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%
Moore's Portable Pneumatic Hoist 25%

Ice Cutting—

Chandler's ..... 15&10%

Washing—

Boss Washing Machine Co.:	Per doz.
Boss No. 1; Boss Rotary	$57.00
Boss No. 7; Dietz Rotary	60.00
Champion Rotary; Banner No. 1	54.00
Standard Champion No. 1	48.00
Standard Perfection	36.00
Cintl Square Western	30.00
Uneeda American, Round	29.00

Mallets—

Hickory ..... 45&5@50%
Lignumvitæ ..... 45&5@50%
Tinners', Hickory and Applewood, doz ..... 50@55c

Mats— Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Menders Hose

Robinson's Hose Menders ..... ₱ gro, $2.00

Milk Cans—See *Cans, Milk*

Mills— Coffee, etc.—

Enterprise Mfg. Co ..... 25@30%
Hoffman's Side, Coffee and Spice .... ₱ doz. $1.25
National, list Jan. 1, '94 ..... 30%
Parker's Columbia & Victoria .. 50&10&60%
Parker's Box and Side ..... 50&10&60%
Swift, Lane Bros Co 30%

Mowers, Lawn—

Net prices are generally quoted.
Cheap ..... all sizes. $1.90@1.95
Good ..... all sizes, $2.25@2.50

	10	*12*	*14*	*16-inch*
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Continental ..... 60&10%
Great American ..... 7 %
Great American Ball Bearing ..... 60&10%
Quaker City 70%
Pennsylvania ..... 60&10%
Pennsylvania Ball Bearing ..... 60&5%
Pennsylvania Golf 50%
Pennsylvania Horse 40%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T ..... 70&10%
Style A, all Steel ..... 65&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list .. 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 .....
.85&10&10@.85&10&10&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C	25c	23c	22c	21c	21c	40&5%
Ausable	28c	26c	25c	24c	23c	50&10%
C. B. K	25c	25c	22c	21c	21c	40%
Champ'n	28c	26c	25c	24c	23c	40&10&5%
Clinton	19c	17c	16c	15c	14c	30&10&5%
Maud S.	25c	23c	22c	21c	21c	50%
Putnam	23c	21c	20c	19c	18c	33⅓%
Putnam						
Cold Rol'd	19c	18c	17c	16c	..	10&10%
American, Nos. 5 to 10						10&10&5%
Neponset	Nos. 5 to 10c ₱ lb 13c					
Jobbers' special brands .. per lb. 8@9c						

Picture

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head	*.45*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head	..	*1.10*	*1.10*	*1.10*	.. *gro.*
Crown Picture Nails					₱ gro. $1.50

Nippers, See *Pliers and Nippers.* Nuts—

Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain $4.50
Hexagon, plain $4.60
Square, C. T. & R $4.70
Hexagon, C. T. & R $5.00
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank $4.80
Hexagon Blank $5.00
Square Tapped $4.60
Hexagon Tapped $4.80

Oakum—

Best or Government ..... lb. 6¼c
Navy ..... lb. 4¾c
U. S. Navy ..... lb. 5¼c
Plumbers' Spun Oakum 5¼c
In carload lots ¼c lb. off f. o. b. New York.

Oil Tanks—See *Tanks, Oil.* Oilers—

Brass and Copper ..... 65@65&10%
Tin or Steel ..... 70&10@75%
Zinc ..... 75@75&10%
Chase or Paragon:
Brass and Copper ..... 65&5@65&10%
Tin or Steel ..... 75@75&10%
Zinc ..... 65@70&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Ame'i'an Tube & Stamping Co.:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc ..... 60@60&10%

Openers— Can—

French ..... doz. 35c
Iron Handle ..... doz. 25@37c
Sprague, Iron Hdle .. per doz. 35@40c
Sardine Scissors .. doz. $1.75@$3.00
Marvel ..... per doz. $1.25
National 50%
Stowell's ..... per dos. 35&45c
Tip Top ..... per doz. $0.75

Egg—

Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing—

Asbestos Packing, Wick and Rope, 15@15½c lb.

Rubber—

Sheet, C. I ..... 8@12c
Sheet, C. O. S ..... 9@13c
Sheet, C. B. S ..... 10@14c
Sheet, Pure Gum ..... 50@70c
Sheet, Red ..... 35@40c
Jenkins' Standard, ₱ lb 80c .. 35@25&5%

Miscellaneous—

American Packing ..... 7@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 9@12½c lb.
Jute ..... 3½@4c lb.
Russia Packing ..... 7@11c lb.

Pails— Creamery

S. S. & Co., with gauges.. No 1 $6.25; No. 2, $5.50 ₱ doz.

Galvanized—

Price per doz.

Quart	*10*	*12*	*14*
Water, Regular	*1.75*	*2.00*	*2.25*
Water, Heavy	*2.75*	*3.00*	*3.25*
Fire, Rd. Bottom	*2.80*	*2.60*	*2.80*
Well	*2.25*	*2.50*	*2.75*

Pans— Dripping—

Standard List .. 60c .@60&10%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.95*	*1.05*	*1.15*	*1.30*	*1.65*

Roasting and Baking—

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.25; 20, $5.75; 30, $6.25.
Simplex, ₱ doz.:

No.	40	50	60	140	150	160
	$2.75	3.25	3.75	3.00	3.25	4.00

Paper—Building Paper—

Asbestos: lb.
Building Felt 2¾c
Mill Board, sheet, 40 x 40 inches 3½c
Mill Board, roll, thicker than 1-16 inch 3¼c
Mill Board, roll, 1-16 in. thick and less 2½c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 25 lbs. to roll	*$0.43@0.50*
Medium wt., 30 lbs. to roll	*$0.48@0.55*
Heavy wt., 40 lbs. to roll	*$0.68@0.75*
Medium Grades Water Proof Sheathing	*$0.65@1.25*
Deafening Felt, 2, 6 and 4½ sq. ft. to lb., ton	*$45.00*
Red Rope Roofing, 250 sq. feet per roll	*$1.65*

NOTE.—*These goods are often sold at delivered prices.*

Tarred Paper.

1 ply (roll 300 sq. ft.), ton .. $32.50@35.00
2 ply, roll 108 sq. ft ..... 60@65c
3 ply, roll 108 sq. ft ..... 82@87c
Slater's Felt (roll 500 sq. ft.) 75c
NOTE.—*Above prices often include delivery.*
R. R. W. Stone Surfaced Roofing (roll 110 sq. ft.) $2.75

Sand and Emery—

Flint ..... 60@60&10%
Garnet ..... 25@25@10%

Parers— Apple—

Advance ..... ₱ doz. $4.50
Baldwin ..... ₱ doz. $5.00
Bonanza Improved ..... each $0.50
Dandy ..... each $7.50
Eureka Improved ..... each $20.00
Family Bay State ..... ₱ doz. $15.00
Improved Bay State ..... ₱ doz. $36.00
New Lightning ..... ₱ doz. $7.50
Reading 72 ..... ₱ doz. $4.00
Reading 78 ..... ₱ doz. $7.00
Turn Table '98 ..... ₱ doz. $6.75
White Mountain ..... ₱ doz. $6.00

Potato—

Saratoga ..... ₱ doz. $7.00
White Mountain ..... ₱ doz. $6 00

Paris Green—

	Less than 1 ton.	*per lb.*
Arsenic kegs or casks		*12½c*
Kegs, 100 to 175 lbs		*13 c*
Kits, 14, 28, 56 lbs		*14 c*
Paper boxes, 2 to 5 lbs		*14 c*
Paper boxes, 1 lb		*14½c*
Paper boxes, ½ lb		*15 c*
Paper boxes, ¼ lb		*16 c*

1 to 5 tons, 1 cent per lb. less; 5 tons and over, 1½ cents per lb. less.

Picks and Mattocks—

List Feb. 23, 1899 ..... 65&10@70%

Pinking Irons—

See *Irons, Pinking.*

Pins— Escutcheon—

Brass ..... 60@60&10%
Iron, list Nov. 11, '85 ..... 60@60&10%

Pipe, Cast Iron Soil—

Standard, 2-6 in ..... 50&10%
Extra Heavy, 2-6 in 65%
Fittings 70%

Pipe, Merchant,

Steel or Iron, Carload Lots, f. o. b., Pittsburgh.

Merchant Pipe.	*Black.*	*Galvanized.*
⅛, ¼, ⅜ inch	*68%*	*58%*
½ inch	*76%*	*60%*
¾ to 6 inch	*75%*	*65%*
7 to 12 inch	*75%*	*65%*

Less than carloads, 12½% advance.

Pipe Sewer—

Jobbers' Prices—
Standard Pipe and Fittings, 2 to 24 in.
New England 70%
New York and New Jersey 75%
Maryland, Delaware, East Penn. 75%
West Penn and West Va 76%
Virginia 78%
Ohio, Michigan and Ky 78%
Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.50	88 50
6 in., per 100 joints	8.00	9.00
7 in., per 100 joints	9.00	10.00

Planes and Plane Irons—

Wood Planes—

Bench, First quality .. 40c&5@40c&10%
Bench, Second qual .. 50c&5@50c&10%
Molding ..... 35%c&5@33⅓&10%
Bailey's (Stanley R. & L. Co) 5&10@25&10&10%
Gage Self Setting 35%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co) ..... 25&10@25&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Sargent's 60%
Union 60%

Plane Irons—

Wood Bench Plane Irons ..... 30c&5@30c&10%
Buck Bros 30%
Stanley R. & L. Co .. 20&10@20&10&10%
L. & L. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₱ doz. $8.50

Plates—

Felloe ..... lb. 3¼@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... 75@75&10%
Gas Burner, per doz., 3 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe .. 7 8 10 12-in.
$1.75 $2.00 $2.75 $3.75
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel, Pliers 25%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 20&5%
Elm City Fence Pliers 35%
Cronk & Carrier Mfg. Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stub's Pattern 50%
Combination and others ..... 33⅓&10%
Heller's Farriers' Nippers, Pincers, and Tools 40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Disston's Plumbs and Levels 70%
Disston's Pocket Levels 70%
C. E. Jennings & Co.'s Iron ..... 25&10%
C. E. Jennings & Co.'s Iron, Adjustable ..... 33⅓&10%
Stanley R. & L. Co ..... 40@40&10&10%
Stanley's Duplex ..... 30@30&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ dos., No. 1, $6.00; No. 2, $ .00; No. 3, $9.00; No. 4, $12.00 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers.. lb. 8½c@..
½-lb. papers..... lb. ... c@...
¼-lb. papers.....lb. 9½c@...

Pokes, Animal—

Ft. Madison Hawkeye.....₱ doz. $3.25
Ft. Madison Western.....₱ doz. $4.00

Police Goods—

*Manufacturers' Lists.....*35@35&5%
Tower's.....25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.75.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz.....$2.00

Stove—

Black Eagle Benzine Paste, 5 ℔ cans ..
₱ lb. 10¢
Black Eagle, Liquid, ½ pt. cans ₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans.....
₱ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail.....each 70¢
Black Silk, ½ ℔ box.....₱ doz. $1.00
Black Silk, 5 oz. box.....₱ doz. $0.75
Black Silk, ½ pt. liq.....₱ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. 11.00
2 qt., Square.....gro. 13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts, each.....$1.30

Potato Parers—

See *Parers, Potato.*

Pots— Glue—

Enameled.....40%
Tinned.....35%

Powder—

In Canisters:
Duck, 1 lb. each.....45c
Fine Sporting, 1 lb. each.....75c
Rifle, ½-lb. each.....15c
Rifle, 1-lb. each.....35c
King's Semi-Smokeless:
Keg (25 ℔ bulk).....$6.50
Half Keg (12½ ℔ bulk).....$3.25
Quarter Keg (6¼ ℔ bulk).....
Case 24 (1 ℔ cans bulk).....$7.25
Half case (1 ℔ cans bulk).....$4
King's Smokeless: Shot Gun .Rifle
Keg (25 ℔ bulk)..... $12 00 $15.00
Half Keg (12½ ℔ bulk) 6.25 7.75
Quarter Keg (6¼ ℔ bulk) 3.25 4.00
Case 24 (1 ℔ cans bulk)..14.00 17.00
Half case 12 (1 ℔ cans blk) 7.25 8 75
Robin Hood Shot Gun.....50&20%

Presses—Fruit and Jelly—

Enterprise Mfg. Co.....20@25%
Sensible.....33⅓%
2 qt., $2.00; 4 qt., $4.00; 10 qt., $6.00 each.

Seal Presses—

Morrill's No. 1, per doz. $20 00.....50%
Morrill's No. 2, per doz. $22 50.....50%

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—

Cyclops.....50%
Miller's Falls, No. 3, per doz. $12.00.....
33⅓&10%
Pearson No. 1, Cyclone Spike Puller, each $37.50.....50%
Pelican, ₱ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 1 (large), ₱ doz. $6.50; No. 2 (large), $5.75; No. 2 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4 50; No. 3-D (small) $4.00.
Smith & Hemenway Co.:
Ajax.....60%
Diamond B, No. 2, case lots, ₱ doz $6.00
Diamond B, No. 3, case lots, ₱ doz $5.50
Eureka.....50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. , $15.....40%
Yankee.....66⅔%

Pulleys—Single Wheel—

Inch	*2*	*2½*	*3*
Awning ..doz	*$0.50*	*.75*	*1.00*

Hay Fork, Swivel or Solid Eye.....
doz., 4 in., $0.95; 5 in., $1.25

Inch	*2*	*2½*	*2⅝*
Hot House..doz	*$0.60*	*.80*	*1.10*
Inch	*1¼*	*1½*	*1¾*	*2*
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Screw.....doz.	*$0.14*	*.17*	*.20*	*.26*
Inch	*1¾*	*2*	*2¼*	*2½*
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Side.....doz.	*$0.27*	*.35*	*.53*	*.55*
Inch	*1½*	*1¾*	*2*	*2½*
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Jackle....doz.	*$0.27*	*.37*	*.50*	*.89*

Stowell's:
Ceiling or End, Anti-Friction.....60%
Dumb Waiter, Anti-Friction...60&10%
Hay Fork, Anti-Friction, 5-in. Wheel, ₱ doz. $12.00.....50%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¾ in., 13c; 2 in., 16c
Auger Mortise, no Face Plate, per doz. 1¾ in., 12c.; 2 in., 15c.
Auger Mortise, with Face Plate, per doz., 1¾ in., 13c.; 2 in., 15½c.
Acme.....1¾in., 16c; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in. ₱ doz 25¢
No. 9, 1¾ in.....₱ doz. 20¢
Extra for Plated Finish...₱ doz 20¢
Extra for Anti-Friction Bronze Bushing.....₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in.. ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy.....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....75&10@80%
Wood.....50@50&10%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch..	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*

Inch..	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.20	*3.60*	*3.85*	*4.10*	*4.50*

Barnes Dbl. Acting (low list).....50%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co.....$16.00
Flint & Walling's Fast Mail (low list).55%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. H. Co.....20%
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Daisy Spray Pump.....₱ doz. $7.50
Myers' Spray Pumps.....50&10%

Punches—

Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality...
$1.75@2.00
Revolving (4 tubes)...doz. $3.75@4.00
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Morrill's No. 1 (A. B. C.), ₱ doz., $15.00 ..50%
No. 2, ₱ doz. $22.50.....50%
No. 2, Metal. ₱ doz., $45.00.....50%
Bench Punch, each, $10.00 ... .50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co. 35@3⅓&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

	⅛	*⅝*	*¾*	*In.*
	$1.70	*$2.10*	*$3 00*	*100 feet*

Angular for Sq. Groove Wheels'

	Small.	*Med.*	*Large.*	
	$1.60	*1 95*	*2.70*	*100 feet.*

Sliding Door, Brnzed Wr'l'n on ft. 6½c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in.....lb. 36c..30%
Allith Mfg. Co. Reliable Hanger Track ₱ foot.....10¢
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
..ance' O. N. T., ₱ 100 ft., 1 inch, $3.10; 1¼ inch, $3.90; 1½ inch, $4.85.
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.....₱ ft. 4½¢
Lawrence Bros. New York.....3½¢
McKinney's Hinged Hanger Rail ₱ foot, 11¢.....50%
McKinney's None Better.....₱ ft. 3½¢
McKinney's Standard .....₱ ft. 4 ¢
Myers' Stayon Track .....50&10%
Smith's Wrought Bracket, Plain.....3½¢
Smith's Special .....4½¢
Smith's Never Jump, per ft. 11¢.....50%
Smith's Plain Steel 30%
Smith's Milled Steel.....4½¢
Stowell's Cast Rail .....1½¢
Stowell's Steel Rail, Plain.....25%
Stowell's Wrought Bracket, Plain....3½¢
Swett's Hylo, per ft. 11¢.....50&10%
Swett's P. L. B. Steel Rail, ₱ 100 ft. $3.0 0

Rakes—

Net Prices, Malleable Rakes:

	10	*12*	*14*	*16-tooth*
Shank.....	*$1.50*	*1.60*	*1.75*	*1.85*
Socket.....	*$1.65*	*1.80*	*1.95*	*2.10*

Steel, August 1, 1899, List...70&5&20%
Malleable.....70&10@75&5%
Lawn Rakes, Metal Head, per doz, 20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....3.00
Jackson Lawn, 29 and 30 teeth, ₱ doz $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.45
Lawn Queen, 24-tooth, ₱ doz. 3.60
Paragon, 20-tooth, ₱ doz.....$2.75
Paragon, 24-tooth, ₱ doz.....3.00
Steel Garden, 14-tooth, ₱ doz.....$2.88
Malleable Garden, 14-tooth, ₱ doz...$2.00

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5@70&10&5%
McCafferty's American Standard .....
60&10&5%
New Nicholson.....70&10%
See also *Files.*

Razors—

Borasic.....60 & 10%
Fox Razors, No. 42, .. ₱ doz. $20.00) 40%
Fox Razors, No. 44, .. ₱ doz, $20.00) dis.
Fox Razors, No. 82, Platina, ₱ doz.) -25.00
Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00 .....$12.00
All other Razors.....40%
Safety Razors.....40%

Safety Razors—

New Gem, in Tin Boxes.....₱ doz. $12.00
New Gem, Extra Blades .....₱ doz. $8.35
Gem Outfits (Razor, Strop, etc.).....
₱ doz. $15.00
Complete Razor, extra Blade in Leather Case.....₱ doz. $27 00

Reels— Fishing—

Bishop's Independent Fish Reel Spooler, ₱ doz.....$80.00
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼ 4008, Silver Rubber Populo, Nickeled Populo, Aluminum, German Silver, Bronze, 3 04 N, 6 N, 4 N to 8 PN.....35&5%
6 RW, 102 P and RN, 202 P and PN.40%
G 9.....20%
24 N to 28 PN.....35&10&10%
124 N, 974 PN, 002904 PN, 1020 R and PRN, 202 PR and PRN.... 50&5%
2904 N.....40&10&5%
5009 P and N.....50%
2904 P.....50&10&5%
3904 PN.....60%
0924 N.....40&10%
02084 N.....45&12½&5%
Single Action Trout .....40&10%
986 P N 802 and 802 N.....40&10%
Competitor, 304 and 304 PN 35%
0304 P and PN.....40&5%
Safety and Salmon.....30%

Registers—*List Sept. 2, 1901.*

Black Jap.....
White Jap.....
Bronzed..... 75&10 @80%
Nickel Plated.....
Electro Plated.....
There is a good deal of irregularity in prices of Registers.

Revolvers—

Single Action.....85@90c
Double Act n, except 44 cal. $1.35@1.50
Double Action, 44 caliber..$1.60@1.65
Automatic .....$2.75@3.00
Hammerless.....$3.25@3.60

Riddles, Grain or Sand—

16 in., per doz.....$2.75@3.00
17 in., per doz.....$3.00@3.25
18 in., per doz.....$3.25@3.50

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 Inch.*
Steel.....	*$0.70*	*0.75*	*0.80 doz.*
Copper.....	*1.00*	*1.10*	*1.35 doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.25@4.50
Hill's Ringers, Gray Iron, doz. 55@60c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.00@5.25
Blair's Ringers...per doz. $0.60@ .65
Brown's Rings....per gro. $5.50@5.75
Brown's Ringers..per doz. $0.75@1.00

Rivets and Burrs—

Copper.....50¢&10@50¢&10¢5%
Iron or Steel:
Tinners'.....75@75¢&10%
Miscellaneous.....75@75¢&10%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....66⅔&5%
Cronk's Brinkerhoff.....66⅔%
Lane's Stay .....33⅓&5%
Stowell's Barn Door Stay.....₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger, tarred or untarred...lb. 11¼@11½c
Manila, ⅜-inch .....lb. 11¾@12 c
Manila, ¼ & 5-16 in....lb. 12¼@12½c
Manila, Hay, Hide and Bale Ropes, Medium and Coarse.....lb. 12¼@12½c
Sisal, 7-16 in. and larger lb. 8 @10 c
Sisal, ⅜-inch .....lb. 8½@10½c
Sisal, ¼ and 5-16 inch..lb. 9 @11 c
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse..... lb. 8 @10 c
Sisal, Tarred, Medium Lath Yarn.....lb. .7½@ 9½c
Cotton Rope:
Best .½-in. and larger, lb. 13½c
Medium..¼-in. and larger, lb. 11 c
Com .....¼-in. and larger, lb. 9 c
Jute Rope:
Thread No. 1, ¼-in. and up, lb. 6½c
Thread No. 2, ¼-in. and up, lb. 6 c
Yarn, ¼-in. and up.. lb. 5 @5½c
Old Colony Manila Transmission Rope, ₱ ℔ 17½¢

Wire Rope—

Galvanized.....40¢&5%
Plain .....45¢&5%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute .....40&5%
Sisal 20%
Covert Saddlery Works. .....60&5%

Rules—

Boxwood.....60¢&10@60¢10¢&5%
Ivory .....35¢10@35¢10¢&5%
Ivory .....35&10@35&10&10%
Patent Combination..... 55@55&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60&10%
Stanley R. & L. Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50@50&10%
Band.....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50&10%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....25%
Disston's:
Circular, Solid and Inserted Tooth 50%
Band, 3 to 14 in wide.....0%
Band, ¼ to 2¾.....70%
Crosscuts.....45%
Narrow Crosscuts.....50%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....55%
Wood-saw Blades.....35%
Woodsaw Rods.....35%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 70, 77, s.....25%
Hand Saws, Nos. ..07, 107½, 8, 1, 0, 00, Combination.....30%
Compass, Keyhole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25&10%
Butcher Saws.....3 &10%
Compass and Key Hole Saws..35&5&10%
Framed Wood Saws.....30& 0%
Hand Saws.....20&2½&10%
Wood Saw Blades.....30&10%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Pease:
Circular and Mill 50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richardson:
Circular and Mill 50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....0&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....2½@25&7½%
Butcher Saws.....35@3&7½%
Hand Saws.....25@2&7½%
Hand Saws, Bay State Brand.....45%
Compass, Keyhole, &c .....2½@25&7½%
Wood Saws .....35@35&7½%

Hack Saws—

Atkins' Hack Saw Blades A A A. ... 30%
Disston:
Concave Blades.....25%
Keystone.....40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best.....25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....
35&5&10%
Hack Saws, Nos. 175, 180, complete.
35&5&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades.....35&5&10%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....25%
Sterling Hack Saw Frames.....20%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Bishop's Lightning.....₱ doz. $3 00
Covert's Saddlery Works .....50&10%

Scales—

Family, Turnbull's.....30@30&10%
Counter:
Hatch. Platform, ½ oz to ½ lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. doz. $16
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Candy, Ice, Postal, Computing 50%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon.....50%

Scrapers—

Box, 1 Handle.....doz. $2.25@2.50
Box, 2 Handle.....doz. $3 00@3 50
Ship Light, $2.50; Heavy, $4.00
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30@30&10%

Screens, Window, and Frames—

Flyer Pattern Window Screen...60@60&5%
Maine Window Screen Frames ..40&10&5%
Perfection Window Screens .....60@60&5%
Phillips' Window Screen Frames.....6..&5%
Porter's:
Fairview Window Screens .....
60&5@60&5&2½%
Hummer Window Screens .....
60&5@60&5&2½%
Klondike Window Screens.....
60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in..$2.75@3.00 :
1¼, $3 25@3.50 : 1¼, $3.85@4.25
Bench, Wood, Beech..doz. $3.00@3.50
Hand, Wood.....30@50@5%
Hand, R. Bliss Mfg. Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....70@15@..%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....70@10@..%
Hand Rail, list Jan. 1, '81.60@10@...%

Jack Screws—

Standard List.....75@10@80@5%
Millers Falls.....50@10@10%
Millers Falls, Roller.....50@10%
P., S. & W.....50@50@10%
Sargent.....70@10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron..50@50@10%
Flat or Round Head, Brass50@50@10%

Set and Cap—

Set (Iron or Steel).....70%
Sq. Hd. Cap.....65%
Hex. Hd. Cap.....65%
Rd. or Fillister Hd. Cap.....60%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts :
Flat Head, Iron.....87½@10@...%
Round Head, Iron.....85@10@....%
Flat Head, Brass.....85@10@....%
Round Head, Brass.....80@10@....%
Flat Head, Bronze....77½@10@....%
Round Head, Bronze.....75@10@...%
Drive Screws.....67½@10%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Per doz.
Clipper Pattern, Grass...$4.50@$5.00
Full Polished Clipper.....$5.00@$5.50
Grain.....$7.00@$7.50
Clipper, Grain.....$7.75@$8.25
Wood and Bush.....$4.75@$5.00

Seeders— Raisin—

Enterprise.....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets :
Wood Hdle..10 Awls doz. $2.00@2.25
Wood Hdle., 1½ Awls, 6 Tools .. doz. $2.50@2.60
Aiken's Sets, Awl and Tools :
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30&10%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior :
No. 1, $7.50 ; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

Garden Tool Sets—

Ft. Madison, Three Pieces, Hoe, Rake and Shovel.....₱ doz. sets.....$9.00

Nail—

Square.....per gro. $2.25@2.50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon.....gro. $4.00@4.25
Knurled, Good.....gro. $5.75@6.00
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12.....25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@10@75%

Saw—

Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.83.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.83.....50%
No. 1 Old Style, $10.00.....50%
Giant Royal, Cross Cut .....₱ doz. $9.00
Royal, Hand.....₱ doz. $5.40
Taintor Positive, ₱ doz. $18.....60%

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70%

Shaves Spoke—

Iron.....doz. $1.00@1.15
Wood.....doz. $1.65@2.25
Bailey's (Stanley R. & L. Co).....50@50&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

	7	*8*	*9 in.*
Cast Iron...			
Best.....	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*$13.00*	*15.00*	*17.00 gro.*
Cheap....	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70@70@10%
" Nickel.....60@60@10%
Fair qual. Jap.....80@80@5%
" Nickel.....75@75@10%
Tailors' Shears.....40@40@10%
Acme Cast Shears.....40@40&5%
Geneva.....60%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge .....1900 list 45%
Wilkinson's Pruning.....40%
Wilkinson's Sheep .....1900 list. 25%

Tinners' Snips—

Steel Blades.....20@5@20@10
Steel Laid Blades.....40@10@5@5
Forged Handles, Steel Blades, Berlin.....40@40&10%
Jennings & Griffin Mfg. Co.'s, 6¼ to 10 inch.....40&7½&10%
Niagara Snips.....40%
P., S. & W. Co.....25%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00.....25%

John T. Henry Mfg. Co.:
Pruning Shears, all grades.....40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller Hatfield's, Sargent's list, 70&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells— Shells, Empty—

Brass Shells, Empty :
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%

Paper Shells, Empty :
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..45&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, New Victor, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....30%
Climax, Union, League, New Rival 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....50&10%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade.....40@5%
Loaded with Smokeless Powder, high grade.....40@10@10%
Robin Hood, Low Brass.....50%
Robin Hood, High Brass.....50&10&5%

Shoes Horse, Mule, &c.—

F. o. b., Pittsburg:
Iron.....per keg $3.85
Steel.....per keg 3.60
Burden's, all sizes, ₱ keg.....$3.90

Shot—

Drop, up to B, 25-lb. bag.....$1.50
Drop, B and larger, per 25-lb. bag $1.75
Buck, 25-lb. bag.....$1.75
Chilled, 25-lb. bag.....$1.75
Dust Shot, 25-lb. bag.....$2.00

Shovels and Spades—

Association List, Nov. 15, 1902....40%

Sieves and Sifters—

Hunter's Imitation..gro. $11.00@11.50
Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

National Mfg. Co.:
Victor.....per gro. $12.00
Surprise.....per gro. $11.00
No Name.....per gro. $11 00
Shaker (Barler's Pat.) Flour Sifters.. ₱ doz., $2.00.....30%

Sieves, Tin Rim—

Per dozen.

Mesh.....	*14*	*16*	*18*	*20*
Black, full size...	*$1.20*	*1.25*	*1.30*	*1.35*
Plated, full size .	*$1.30*	*1.35*	*1.40*	*1.45*
Black, scant....	....	*$0.95*	*1.00*	*1.05*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.65@0.75
Mesh 20, Nested, doz..... .75@ .85
Mesh 24, Nested, doz..... .90@1.00

Sinks—

Cast Iron—

Standard list.....60@60@10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Skeins Wagon—

Cast Iron.....70@70@10%
Malleable Iron.....40@10@50%
Steel.....40@40@10%

Slates, School—

Factory Shipments.

"D" Slates.....45%
Noiseless Slates.....60@4 tens &5%
Wire Bound.....40%

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling No. 10, $2.00.....33⅓

Snaps, Harness—

German.....40@40@10%
Covert Mfg. Co.:
Derby.....30&5&2%
High Grade.....45%
Jockey.....30&10%
Trojan.....45%
Yankee.....30&5&2%
Yankee, Roller.....30&5&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community:
Solid Steel.....60&5%
Solid Swivel.....60%
Sargent's Patent Guarded .....60&5&10%

Snaths—

Scythe.....50@10@1%

Snips, Tinners'—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality.....50&10@60&10&5%
Cheap.....60@60&10%
International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand..60%
Wm. Rogers & Son.....60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware.....60%
No. 77 Silver Plated Ware.....60&10%

Miscellaneous—

German Silver.....60@60&10%
Cattaraugus Cutlery Co.:
Yukon Silver.....50%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list 10&10%

Tinned Iron—

Teas.....per gro. 45@50c
Tables.....per gro. 90c@$1.00

Springs— Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider :
Black or ½ Bright, lb.....5¼c
Bright, lb.....5½c
Painted Seat Springs :
1½ x 2 x 26, per pr.....50@55c
1½ x 2 x 28 per pr.. .....60@65c
1½ x 3 x 28 and narrower, per pr. 80@85c

Sprinklers, Lawn—

Enterprise.....25@30%
Macksey.....₱ doz. $1.80
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } List Jan. 5, 1900.
Steel and Iron... } .... 70&10%
Rosewood Hdl Try Square and T-Bevels .....60@10@10@10%
Iron Hdl. Try Squares and T-Bevels. 50@10@50@10@10%
Disston's Try Sq. and T-Bevels.....10%
Winterbottom's Try and Miter..... 40&10@40&10&10%

Squeezers— Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50 : No. 1, $6.25@$6.50.
Wood, Porcelain Lined. Cheap .....doz. $2.00@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25

Staples—

Barbed Blind. .....lb. 6@6½c
Electricians', Association list..... 80@10&10&10%
Fence Staples, See Trade Report.
Galvanized, 15c less than Barb Wire Polished. 20c less than Barb Wire.
Poultry Netting. Staples....per lb.. 3½@3¾c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
Hartzell Cutlery Co.....30&5%
C. & A. Hoffmann's.....40%

Steelyards.....25@10@30@10%

Stocks and Dies—

Blacksmiths'.....40@10@50%
Curtis Reversible Ratchet Die Stock..25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. ....₱ gro. $11.00
White Mountain S. S....₱ gro. $9.00
Green Mountain S. S....₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S. ₱ gro. $7.00
No. 2 Indian Pond S. S. ₱ gro. $4.50
Leader ed End S. S....₱ gro $4.50
Balance of 1901 list 33⅓%.

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co. 1901 list: ₱ lb.
Arkansas Stone, No. 1, 3 to 5½ in. $2.80
Arkansas Stone, No. 1, 5½ to 8 in. $3.50
Ark ansas Slips N . 1 .....$4.00
Lily White Washita 4 to 8 i .....60¢
Rosy Red Washita, 4 to 8 in .....60¢
Washita Stone, Extra, 4 to 8 in..50¢
Washita Stone, No. 1, 4 to 8 in..40¢
Washita Stone, No. 2, 4 to 8 i ..30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
India Oil Stones (entire list) .....3 ⅓%

Hindostan No. 1, Regular.....₱ D 8¢
Hindostan No. 1 Small.....₱ D 10¢
Axe Stones (all kinds) 40%
Turkey Oil Stones, ex. 5 tos in. ₱ D 80¢
Queer Creek Stones, 4 to 8 in.....20¢
Queer Creek Slips.....40¢
Sand Stone.....5¢
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones, ₱ doz.....$8.00
Quick Edge Pocket Knife Hones, ₱ doz.....$3.00
Mounted Kitchen Sand Stone, ₱ doz.....$1.50

Stoners— Cherry—

Enterprise.....25@30%

Stops Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Straps— Box—

Cary's Universal, case lots.....20@10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@60c
Socket.....doz. $1.70

Stuffers Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Supports, Porch—

Hoffman's Porch Supports....₱ doz. 25¢

Sweepers, Carpet—

National Sweeper Co.:	Per doz.
Marion, Roller Bearing, regular finishes, full Nickel	$24.00
Marion Queen, Roller Bearing, Fancy Veneers, full Nickel	$27.00
Monarch, Roller Bearing, Nickel	$22.00
Monarch, Roller Bearing, Jap'ned	$20.00
Marion Queen, Roller Bearing, Regular Finishes, full Nickel	$24.00
Transparent, Roller Bearing, Plate Glass Top, Nickel	$32.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel	$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned	$33.00
Perpetual, Regular Bearings, Nkl.	$20.00
Perpetual, Regular Bearings, Jap.	$18.00

NOTE.—*Discount of 50c per dozen on three-dozen lots. Discount of $1 per dozen on five-dozen lots.*

Tacks Brads, &c.—

List Jan. 15, '99.
Carpet Tacks, American ..... 90@25c&5@....%
American Cut Tacks..90@20c&5@....%
Swedes Iron Tacks ...90@30c5@....%
Swedes Upholsterers' Tacks..... 90@45c&10c&5@....%
Gimp Tacks.....90@45c&5@....%
Lace Tacks.....90@40@....%
Trimmers' Tacks..90@30c&10c&5@....%
Looking Glass Tacks....70c&10@....%
Bill Posters' and Railroad Tack.... 90@45c&5@....%
Hungarian Nails ....80@20c&5@....%
Common and Patent Brads....80@10%
Trunk and Clout Nails...80c&5@....%
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks.....90 and 5 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50c&10@60%
See also *Nails, Wire.*

Tanks, Oil—

	Each.
Emerald, S. S. & Co.....30-gal	$3.40
Emerald, S. S. & Co.....60-gal.	$4.25
Queen City S. S. & Co., 30-gal.....	$3.65
Queen City S. S. & Co., 60-gal.....	$4.50

Tapes Measuring—

American Asses' Skin.....50c&10@30%
Patent Leather.....25@30c&5%
Steel.....40@40c&5%
Chesterman's.....25@25c&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Teeth Harrow—

Steel Harrow Teeth, plain or headed, ⅝ inch and larger..per 100 lbs..$3.00

Thermometers—

Tin Case.....80c&10@30c&10c&5%

Ties, Bale—Steel Wire.

Single Loop.....80@80c&10%
Improved, Monitor, Cross Head, Etc.....70%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6¼ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11½ in ₱ 1000..$12.00
Galv. Steel 5-32 x 15½ in. ₱ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tools— Coopers'—
L. & I. J. White ..... 20@20&5%

Hay—
Myers' Hay Tools 50%

Saw—
Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—
L. & I. J. White 25%

Transom Lifters—
See *Lifters, Transom.*

Traps— Fly—
Balloon, Globe or Acme ..... doz. $1.15@1.25 ; gro. $11.50@12.00
Harper, Champion or Paragon ..... doz. $1.25@1.50 ; gro. $13.00@13.50

Game—
Oneida Pattern ..... 80@30&5%
Newhouse ..... 45@45&5%
Hawley & Norton ..... 65&5@65&10%
Victor (Oneida Pattern) ..... 75@75&5%
Star (Blake Pattern) ..... 60@5@60&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes ..... 8½@9c
Mouse, Round or Square Wire ..... doz. 85@90c
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 7 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00
No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00 ..... 50%
J. M Mast Mfg. Co.: Per gro.

	Mouse.	Rat.
Blizzard	No. 12, $3.00	No. 1, ₱ 9 50
Old Nick	No. 30, 2.22	No. 2, 8.40
Joker	No. 5, 2.10	No. 3, 8.40

Imp'd Snap Shot, Mouse, per gro., 2 hole, $2 40.
Imp'd Snap Shot, Mouse, per gro., 4 hole, $4.20.

Trimmers Spoke—
Bonney's Nos. 1 and 2 ..... 40%
Wood's E I 50%

Trowels—
Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ..... ₱ gro. $5.00
Kohler's Steel Garden Trowels, 6 in ..... ₱ gro. $6.00
Never-Break Steel Garden Trowels ..... gro. $6.00
Peace's Plastering 30%
Rose Brick and Plastering ..... 25&5%
Woodrough&McParlin,Plast'ring 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... per doz. $16.00
Grocery ..... per doz. $15.00
Daisy Stove Trucks, Improved pattern ..... doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	$4.75	5.25	6.00

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20
Per doz.	$5.25	6.00	6.75	6.50	7.00

8.00

Twine—Miscellaneous—

Flax Twine—	BC	B.
No. 9, ¼ and ½-lb. Balls	21½c	23½c
No. 12, ¼ and ½ lb. balls	17½c	19½c
No. 18, ¼ and ½-lb. Balls	15½c	17½c
No. 24, ¼ and ½-lb. Balls	15 c	17 c
No. 36, ¼ and ½-lb. Balls	14½c	16½c

Chalk Line, Cotton, ½-lb Balls ..... 22@23½c
Cotton Mops, 6, 9, 12 and 15 ℔. to doz 8c
Cotton Wrapping 5 Balls to ℔ ... according to quality ..... 11c@17c
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 13@14c
American 3 Ply Hemp, 1-lb. Balls .. 13@14c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 8c
India 3-Ply Hemp, 1-lb. Balls 8c
India 3-Ply Hemp, 1½-lb. Balls ... 7c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ... 8@9c
Mason Line. Linen, ¼-lb. Balls ... 45c
No. 264 Mattress, ¼ and ½-lb. Balls. 37c
Wool, 3 to 6 ply ..... 5@5½c

Binder—

	Cents per lb
Sisal	10¼
Standard	10¼
Standard Manila (550 ft.)	11
Manila (600 ft.)	12
Pure Manila (650 ft)	12¾

F.o.b. Eastern Mill. Carload lots ¼ cent less.

Vises—
Solid Box ..... 50c@10@50&10c&5

Parallel—
Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Bonney's 40%
Columbian Hdw Co 40%
Emmert Universal:
Pattern Makers' No. 1 ..... $15.00 net
Pattern Makers' No. 2 ..... $18.00 net
Machinist and Tool Makers' ..... $15.00 net
Fisher & Norris Double Screw ..... 15&10%
Hollands':
Machinists' 40%
Key-tone ..... 65&5%
Lewis Tool Co ..... 20@30%
Merrill's 20%
Miller's Falls ..... 50&10&10%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists 40%
Jewelers 33⅓%
Snediker's X. L 33⅓%
Stephens' 33⅓%

Saw Filers'—
Bonney's, No. 1, $13; No. 3, $16 . 50&5%
Disston's D 3 Clamp and Guide, ₱ doz $30 ..... 25%
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&30%

Wood Workers'—
Wyman & Gordon's Quick Action, 6 in., $6.00 ; 9 in., $7.00 ; 14 in., $8.00.

Miscellaneous—
Bignall & Keeler Combination Pipe Vise 60%
Parker's Combination Pipe:
87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.

B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	80c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Dis. 15%

Ware Hollow—
Cast Iron, Hollow—
Stove Hollow Ware :
Ground 60%
Unground 65%
White Enameled Ware :
Maslin Kettles 70%
Covered Ware :
Tinned and Turned 40%
Enameled 50%
See also *Pots Glue.*

Enameled—
Agate Nickel Steel Ware, list Nov. 1, '01 ..... 50&10%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled 50%

Tea Kettles—
Galvanized Tea Kettles :

Inch	6	7	8	9
Each	.45c	50c	55c	65c

Steel Hollow Ware.
Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles ..... 65&5%
Solid Steel Kettles 60%

Warmers, Foot—
Pike Mfg. Co., Soapstone ..... 40@40&10%

Washboards—

Solid Zinc :	₱ doz
Crescent, family size, bent frame	$3.00
Red Star, family size, stationary protector	$3.00
Double Zinc Surface :	
Saginaw Globe, family size, stationary protector	$2.65
Cable Cross, family size, stationary protector	$2.90
Single Zinc Surface :	
Salad, family size, open back perforated	$2.40
Saginaw Globe, protector, family size, ventilated back	$2.25
Brass Surface :	
Brass King, Single Surface, open back	$3.00
Nickel Plate Surface :	
No. 1001 Nickel Plate, Single Surface	$3.00

Washers—
Leather, Axle—
Solid ..... 85c 10c 10@85c 10c 10c 10%
Patent ..... 85c 10@85c&20%
Coil : ⅞ 1 1¼ 1¼ *Inch.*
9c 10c 11c 13c *per 100*

Iron or Steel—
Size bolt .... 5-16 ⅜ ½ ⅝ ¾
Washers $5.80 5.90 4.60 4.40 4.20
In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots. per lb. ..... 1¼@2c

Wedges—
Oil Finish ..... lb. 2.90@3.10c

Weights—
Hitching—
Covert's Saddlery Works ..... 60&10%

Sash—
Per ton, f.o.b. factory :
Eastern District $26.00
Western, Central and Southern Districts $27.00

Wheels, Well—
8-in., $1.6 @1.80; 10-in., $2.00@2.25; 12-in., $2.45@2.65; 14-in., $4.00@4.25

Wire and Wire Goods—
Bright and Annealed :
6 to 9 ..... 72½c&5@72½c&10%
10 to 18 ..... 72½c&10@72½c&10c&5%
19 to 26 ..... 75c&10c&2½@75c&10c&7½%
27 to 36 ..... 75c&10c&7½@80c&2½%
Galvanized :
6 to 18 ..... 70@70c&5%
19 to 26 ..... 72½c&5@72½c&10%
27 to 36 ..... 72½c&10@72½c&10c&5%
Coppered :
6 to 9 ..... 70c&5@70c&10%
10 to 18 ..... 70c&10@70c&10c&5%
19 to 26 ..... 75c&10@75c&10c&2½%
27 to 36 ..... 75c&10@75c&10c&5%
Tinned :
6 to 14 ..... 75@75c&7½%
15 to 18 ..... 72½c&5@75%
19 to 26 ..... 70c&5@70c&5c&5%
27 to 36 ..... 70c&10c&5%
Annealed Wire on Spools ... 70c&10c&5%
Brass and Copper Wire on Spools. 60@60c&5%
Brass, list Feb. 26, '96 ..... 50@30%
Copper, list Feb. 26, '96 ..... 15%
Cast Steel Wire 50%
Stubs' Steel Wire ..... $6.00 to $. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901 ..... 85c&10c&10@90%

Wire Cloth and Netting—
Galvanized Wire Netting ..... 80@80c&10%
Painted Screen Cloth per 100 ft. $1.15
Light Hardware Grade :
2-8 Mesh, Plain (8c. list) sq. ft... 1¾@2c
2-8 Mesh, Galv. (8c. list) sq. ft... 2½@3¼c

Wire, Barb—See *Trade Report.*

Wrenches—
Agricultural ..... 75&5@75c&10c&5%
Baxter Pat'rn S Wrenches 70c&5@70c&10%
Drop Forged S ..... 45@45c&5%
Acme ..... 60&10%
Alligator 70%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S ..... 35&5%
Adjustable S Pipe 40%
Brigg's Pattern ..... 30&10%
Combination Black ..... 40&5%
Combination Bright 40%
Cylinder or Gas Pipe 55%
Extra Heavy 45%
Merrick's Pattern 50%
No. 3 Pipe, Bright 55%
Boardman's 33⅓%
Coes' Genuine ..... 40&10&5&5%
Coes' "Mechanics' ..... 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Dudly Auto ..... 50&5@50&10%
Eagle ..... 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&10%
Less than case lots ..... 50&5%
Improved Pipe (W. & B.) 60%
Solid Handles, P.S. & W ..... 50@50&5%
Stillson 65%
Triumph ..... 60&10%
Vulcan Chain 50%

Fruit Jar—
Perfection Fruit Jar Wrenches, ₱ gro. $3.00
Triumph Fruit Can Wrenches, ₱ gro. $19.20
Cap Wrenches ..... ₱ gro. $8.00
Triumph Fruit Jar Holders, ₱ doz. $3.00
Triumph Fruit Jar Holders, ₱ gro. $30.00

50%

Wrought Goods—
Staples, Hooks, &c., list March 17 '02 ..... 90@90c&5%

Yokes Neck—
Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters', list net

Zinc—
Sheet ..... lb 6¾ @7c

PAINTS, OILS AND COLORS —Wholesale Prices.

White Lead, Zinc, &c.
Lead, English white, in Oil ..... 7 @ 9½
Lead, American White, in Oil:
Lots of 500 ℔ or over ..... @ 6¾
Lots less than 500 ℔ ..... @ 7¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price ..... @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price ..... @ 1¼
Lead, American, Terms: For lots 12 tons and over ½@ rebate ; and 2% f r cash if paid in 15 days from date of invoice ; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice; for lots of less than 500 lbs. net.
Lead White, Dry in bbls ..... 5¾@ 6¼
Zinc, American, dry ..... ₱ ℔ 4¾@ 4¾
Zinc, Paris, Red Seal, dry ..... @ 8½
Zinc, Paris, Green Seal, dry ..... @ 9½
Zinc, Antwerp Red Seal, dry ..... @ 7¾
Zinc, Antwerp, Green seal, dry .. @ 8½
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over ..... 12 @12¼
Lots of less than 1 ton ..... 12¼@12¾
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over ..... 10¾@11¼
Lots of less than 1 ton ..... 11@11½

DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon ..... ₱ ℔ 6 @ 8
Black, Drop, Amer ..... 4 @ 7
Black, Drop, Eng ..... 7 @11
Black, Ivory ..... 12 @21
Lamp, Com ..... 4½@ 6
Blue, Celestial ..... ₱ ℔ 4 @ 6
Blue, Chinese ..... 30 @35
Blue, Prussian ..... 28 @34
Blue, Ultramarine ..... 3½@15
Brown, Spanish ..... ½@ 1
Brown, Vandyke, Amer ..... 1½@ 2½
Brown, Vandyke, Foreign ..... 2½@ 3½
Carmine, No. 40 ..... ₱ ℔ $2.25@2.50
Green, Chrome, ordinary ..... 3 @ 3½
Green, Chrome, pure ..... 19 @26
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6¾
Lots less than 500 ℔ ..... @ 7¼
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6¾
Lots less than 500 ℔ ..... @ 7¼
Ocher, French Washed ..... 5 @ 7
Ocher, Dutch Washed ..... 5 @ 7
Ocher, American ..... ₱ ton $10.00@15.00
Orange Mineral, English ..... ₱ ℔ 8½@ 9½
Orange Mineral, French ..... 10½@11¼
Orange Mineral, German ..... 8½@9½
Orange Mineral, American ..... 8½@ 8½
Red, Indian, English ..... 4½@ 8½
Red, Indian, American ..... 3 @ 3½
Red, Turkey, English ..... 4 @ 6
Red, Tuscan, English ..... 7 @10
Red, Venetian, Amer., ₱ 100 ℔. 50@1.50
Red Venetian, English, ₱ 100 ℔. 1.50@1.75
Sienna, Italian, Burnt and Powdered ..... ₱ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd ..... 3½@ 7½
Sienna, American, Raw ..... 1½@ 2
Sienna, American, Burnt and Powdered ..... ₱ ℔ 1½@ 2
Tale, French ..... ₱ 100 ℔ $1.25 @1.50
Tale, American ..... .90 @1.10
Terra Alba, French, ₱ 100 ℔ .95 @1.00
Terra Alba, English ..... .95 @1.00
Terra Alba, American No. 1 ..... 85 @85
Terra Alba, American No. 2 ..... 45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer ..... 1½@ 2
Umber, Raw, Amer ..... 1½@ 2
Yellow, Chrome ..... 11 @14
Vermilion, American Lead ..... 10 @40
Vermilion, Quicksilver, bulk ..... @70
Vermilion, Quicksilver, bags ..... @71
Vermilion, English, Import ..... 80 @95
Vermilion, Chinese ..... .$1.05@1.20

Colors in Oil.
Black, Lampblack ..... 12 @14
Blue, Chinese ..... 36 @40
Blue, Prussian ..... 32 @36
Blue, Ultramarine ..... 13 @16
Brown, Vandyke ..... 11 @14
Green, Chrome ..... 10 @15
Green, Paris ..... @21
Sienna, Raw ..... 13 @15
Sienna, Burnt ..... 14 @15
Umber, Raw ..... 11 @14
Umber, Burnt ..... 11 @14

Miscellaneous.
Barytes, Foreign, ₱ ton ..... $19.00@21.00
Barytes, Amer. floated ..... 19.00@20.00
Barytes, Crude, No. 1 ..... 9.00@10.00
Chalk, in bulk ..... ₱ ton 3.45@ 3.50
Chalk, in bbls ..... ₱ 100 ℔ .@ 35
China Clay, English ..... ₱ ton 10.50@17.00
Cobalt, Oxide ..... ₱ 100 ℔ 3.25@ 3.50
Whiting, Common ..... ₱ 100 ℔ .48@ .55
Whiting, Gilders ..... .62@ .68
Whiting, extra Gilders' ..... .66@ .72

Putty.
In bladders ..... 1¾@2¼
In bulk ..... 1¼@2
In cans, 1 ℔ to 5 ℔ ..... 2½@4¼
In cans, 12 ½ ℔ to 25 ℔ ..... 1½@2¼

Spirits Turpentine.
In Southern bbls ..... 56½@57 c
In machine bbls ..... 57 @57½c

Glue.
Cabinet ..... ₱ ℔ 11½@16
Extra White ..... 18 @23
French ..... 12 @40
Irish ..... 13½@16
Low Grade ..... 9 @12
Medium White ..... 14½@16½

Animal, Fish and Vegetable Oils.
Linseed, City, raw ..... ₱ gal. 46 @ 47
Linseed, City, boiled ..... 48 @49
Linseed, State and West'n, raw 43 @46
Linseed, raw Calcutta seed ..... 75 @ ..
Lard, Prime ..... 84 @85
Lard, Extra No. 1 ..... 65 @68
Lard, No. 2 ..... 48 @49
Cotton-seed, Crude, f.o.b. mills. 34 @36
Cotton-seed, Summer Yellow, prime ..... 42 @42½
Cotton-seed Summer Yellow, off grades ..... 37½@38
Sperm, Crude ..... @ ..
Sperm, Natural Spring ..... 71 @73
Sperm, Bleached Spring ..... 74 @76
Sperm, Natural Winter ..... 75 @77
Sperm, Bleached Winter ..... 78 @80
Tallow, Prime ..... 60 @62
Whale, Crude ..... @ ..
Whale, Natural Winter ..... 46 @47
Whale Bleached Winter ..... 48 @49
Menhaden, Brown, Strained ..... 31 @32
Menhaden, Light Strained ..... 32 @33
Menhaden, Bleached Winter ..... 34 @35
Menhaden, Ex Bleached Winter 36 @37
Cocoanut, Ceylon ..... 5¾@ 6¼
Cocoanut, Cochin ..... 5¾@ 7
Cod, Domestic ..... 32 @34
Cod, Newfoundland ..... 35 @37
Red Elain ..... 47 @48
Red Saponified ..... ₱ ℔ 5½@ 5¾
Olive, Italian, bbls ..... 53 @ 58
Neatsfoot, prime ..... 57 @58
Palm, prime, Lagos ..... ₱ ℔ 5¾@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test ..... ₱ gal. 11½@13
Black, 29 gravity, 15 cold test. 12½@13
Black, Summer ..... 11 @12½
Cylinder, light filtered ..... 16½@19½
Cylinder, dark filtered ..... 15½@18
Paraffine, 903-907 gravity ..... 15 @15½
Paraffine, 900 gravity ..... 14 @14½
Paraffine, 883 gravity ..... 11¾@12
Paraffine, red, No. 1 ..... 15 @15½
In small lots ½@ advance.

CURRENT METAL PRICES.

APRIL 15, 1903.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Refined Iron:	
1 to 1¾ in. round and square	₩ lb @2.25¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb @2.25¢
1¾ to 4 in. x ¼ to 5-16	₩ lb @2.35¢
Rods—⅝ and 11-16 round and square	₩ lb @2.45¢
Angles:	Cus ₩ lb
3 in. x ¼ in. and larger	2.40¢
3 in. x 3-16 in. and ⅛ in.	2.70¢
1½ to 2¼ in. x ¼ in.	2.50¢
1½ to 2¾ in. x 3-16 in. and thicker	2.40¢
1 to 1¼ in. x 3-16 in.	2.50¢
1 to 1¼ x ⅛ in.	2.60¢
⅞ x ¼ in.	2 70¢
⅞ x ⅛ in.	2.80¢
⅝ x ¼ in.	4.00¢
⅝ x ⅛ in.	4 00¢
½ x 3-32 in.	4.50¢
Tees:	
1 in.	3.00¢
1¼ in.	2.70¢
1½ in. and larger	2.50¢
Beams	2.40¢
Channels, 3 in. and larger	2.50@3.00¢
Bands—1½ to 6 x 3-16 to No. 8	₩ lb 2.50¢
"Burden's Best" Iron, base price	₩ lb 3.30¢
Burden's "H. B. & S." Iron, base price	₩ lb 3.10¢
"Ulster"	₩ lb 3.15¢
Norway Bars	3.75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	2.20¢
Toe Calk, Tire and Sleigh Shoe	2.30@3.00¢
Best Cast Steel, base price in small lots	7¢

Soft Steel Sheets—

¼ inch	2.40¢	No. 14	2.70¢
3-16 inch	2.50¢	No. 16	2.80¢
No. 8	2.50¢	No. 18	3.00¢
No. 10	2.50¢	No. 20	3.00¢
No. 12	2.60¢	No. 22	3.10¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel	G. R. Cleaned.
Nos. 14 to 16	₩ lb 2.90	3.0 ¢
Nos. 18 to 21	₩ lb 3.00	3.10¢
Nos. 22 to 24	₩ lb 3.10	3.20¢
Nos. 25 and 26	₩ lb 3.20	3.30¢
No. 27	₩ lb 3.30	3.40¢
No. 28	₩ lb 3.40	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 11¾@14¢
Patent Planished	₩ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₩ lb, 3.24¢
Nos. 18 to 20	₩ lb, 3.51¢
Nos. 22 to 24	₩ lb, 3.78¢
No. 26	₩ lb, 4.05¢
No. 27	₩ lb, 4.32¢
No. 28	₩ lb, 4.59¢
No 30	₩ lb, 5.67¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 10 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	31½@32 ¢
Straits, Pigs	31½@32 ¢
Straits in Bars	32 @32½¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$6.75
IX, 14 x 20	8.25
Melyn Grade:	
IC, 14 x 20	6.50
IX, 14 x 20	7.75
Allaway Grade:	
IC, 14 x 20	5.50
IX, 14 x 20	6.60

American Coke Plates—Bessemer—

IC, 14 x 20 108 lb	$4.70@4.80
IX, 14 x 20	$ .00@6.25

American Terne Plates—

IC, 20 x 28	$9.50
IX, 20 x 28	11.50

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free. Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	15½@15¾¢
Casting	15 @15¼¢

Sheet and Bolt—

March 12, 1903. Net.

Prices, in cents per pound. Sheet 30 x 60.

	Not wider than	Not longer than	And longer than	64 oz. & over, 60 in. sheet, 30 x 60 in. and heavier.	48 oz. to 64 oz. 25 to 30 lb.	24 oz. to 32 oz. 12½ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9¾ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
	Ins.	Ins.	Ins.									
	30	72	.....	20	21	21	21	22	23	24	27	30
	30	96	72	20	21	21	21	22	24	27	30	
	30	.....	96	20	21	21	21	23	27	.....	.....	
	36	72	.....	20	21	21	21	23	25	28	31	
	36	96	72	20	21	21	21	23	27	30	.....	
	36	120	96	20	21	21	22	24	.....	.....	.....	
	36	.....	120	20	21	20	23	.....	.....	.....	.....	
	48	72	.....	20	21	21	23	25	28	31	.....	
	48	96	72	20	21	20	24	26	29	.....	.....	
	48	120	96	20	21	23	25	29	.....	.....	.....	
	48	.....	120	20	22	24	27	.....	.....	.....	.....	
	60	72	.....	20	21	22	24	27	32	.....	.....	
	60	96	72	20	21	23	25	30	.....	.....	.....	
	60	120	96	20	22	24	27	.....	.....	.....	.....	
	60	.....	120	21	23	25	29	.....	.....	.....	.....	
	72	96	.....	20	22	24	29	.....	.....	.....	.....	
	72	120	96	20	23	26	31	.....	.....	.....	.....	
	72	.....	120	21	24	29	.....	.....	.....	.....	.....	
108		96	.....	21	24	27	.....	.....	.....	.....	.....	
108		120	96	22	25	28	.....	.....	.....	.....	.....	
108		.....	120	23	26	30	.....	.....	.....	.....	.....	
wider than 108		132	120	24	27	.....	.....	.....	.....	.....	.....	
		.....	132	25	26	.....	.....	.....	.....	.....	.....	

Rolled Round Copper, ⅜ inch diameter and over, ₩ lb 20¢.

Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	24¢
12 oz. and up to 14 oz. to square foot, ₩ lb	25¢
10 oz. and up to 12 oz., ₩ lb	26¢
Lighter than 10 oz., ₩ lb	27¢

Circles less than 8 in. diameter, 2¢ ₩ lb additional

Circles over 13 in. diameter are not classed as Copper Bottoms.

Polished Copper Bottoms and Flats, 1¢ ₩ lb extra.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

List Feb. 20, 1901.

Nos.	0000 to 3	9 and 10		11 and 12
	Base	¼¢		¼¢ ₩ lb adv.
Nos.	13	14	15	16
	¼¢	⅝¢	1¢	1¼¢ ₩ lb adv.
Nos.	17	18	19	20
	1¼¢	2¢	2½¢	2¾¢ ₩ lb adv

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W.G.	B. & S. W.G.	⅛	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	.....	.....	.....	.....	33	31	30	29	28	27	25	24
12	10	.....	.....	37	35	33	31	30	29	28	27	25	24
13	11	.....	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	33	32	31	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28 ₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Jan. 6, 1898.

Brown & Sharpe's gauge standard.

				Per lb.
Plain Round Tube,	¼	in. up to	2 in.	$0.35
"	"	"	¼ "	.36
"	"	"	⅜ "	.38
"	"	"	½ "	.41
"	"	"	⅝ "	.48
"	"	"	¾ "	.53
"	"	"	7-8 "	.60
"	"	"	1 "	1.00
"	"	"	3-16 "	1.50

Smaller than ¼ inch	Special
2 inch to 3 in. in. to No. 19, inclusive	.35
3 inch	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.

Discount from list 25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 12	in. 13 14	in. 15 16	in. 17 18	in. 19 20	in. 21 22	in. 23 24	in. 25 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.33	.39

Common High Brass Wider than and including	in. 26 28	in. 28 30	in 30 32	in. 32 34	in 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add 1¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 25%

Wire in Coils.

List February 28, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilding bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 2½; Copper Wire, Net.

List November 16, 98.

Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net	19¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net,	20¢

Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter 6@ 6¼¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks 7.15¢ | Per lb 8¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	5@5¼¢
Bar	5½@5¾¢
Pipe	7½¢ 20% off
Tin Lined Pipe	12½¢ 20% off
Block Tin Pipe	40¢ net
Sheet Lead	7¾¢ 20% off

Old Lead in exchange, 4¼¢ ₩ lb.

Solder.

½ & ¼, guaranteed	20 @20½¢
No. 1	17½@18 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 9 @9½¢
Hallett's	₩ lb 7¾@7¾¢
U. S.	₩ lb 7 @7½¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:	
Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₩ lb 34¢
100-lb lots	₩ lb 33¢

Aluminum Sheet, B. & S. gauge, 50 lb or more

Wider than	6-in. ₩ lb.	14-in. ₩ lb.	24-in. ₩ lb
And including	14-in. ₩ lb.	24-in. ₩ lb.	30-in. ₩ lb
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	No. 20	₩ lb 65¢
No 14	₩ lb 43½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 12 ¢
Light and Tinned Copper	₩ lb 11½¢
Heavy Brass	₩ lb 8¾¢
Light Brass	₩ lb 6¾¢
Lead	₩ lb 4½¢
Tea Lead	₩ lb 3¾¢
Zinc	₩ lb 3½¢
No. 1 Pewter	₩ lb 18½¢
No. 2 Pewter	₩ lb 8½¢
Pure Aluminum, Sheet, ₩ lb	21¢
Cast Aluminum, ₩ lb	16¢
Tin Plate scrap	per ton $4 50@5 00
Wrought Scrap Iron	₩ gross ton $18.00@18.50
Heavy Cast Scrap	₩ gross ton $17.50@18.00
Stove Plate Scrap	₩ gross ton $11.00@11.50
Burnt Iron	₩ gross ton $10 00@10.50